Raw-Material Forecast

• The current issue of FOOD INDUSTRIES is our first attempt at forecasting—and we have had to leave out more than we put in. Fancy a forecast of agricultural production omitting a weather forecast. Well, right now we want to see a little winter weather first, so that we can be certain we are starting out from the right place.

• Imagine our feelings on Jan. 4 to discover that the House Committee on Agriculture reported out the parity farm relief bill—the so-called Jones Bill—which is not quite a voluntary allotment plan. At that moment the January issue had just gone to the post office. Well! the Senate Agricultural Committee shall not outsmart us—not by a Huey Long shot.

Coming

• In March we plan to treat you to some statistics that you will save as long as packaging machinery is operated. In response to several requests we are compiling a table of essential data on packaging. Wait until some foxy boy in your sales department wants to do something tricky in the way of a new style of package. Then you get out the March, 1933, FOOD INDUSTRIES and say, "Atta boy, Freddie. Here are the specifications and limits. You and the artists get together on this basis first. Then come see me later."

• An expert operator of automatic packaging machinery is writing on packaging in transparent cellulose materials. We thought we ourselves were pretty hot on machine operations until we talked to him.

• House-to-house delivery is growing in importance, particularly since a truck costs hardly more than a horse and wagon. Our automotive editor will discuss and compare the various makes of drop-frame trucks.

Plan to Attend Packaging Exposition

• On March 7-10, the third annual packaging exposition is to be held at the Pennsylvania Hotel, in New York City. Its appeal is to all industries, not merely food producers. We urge readers to send production men as well as package specialists. The meetings and clinics held last year were about the most instructive we have ever attended in 25 years of conventioning. FOOD INDUSTRIES will have plenty of tickets to the exposition, but *only a very few tickets to the clinics.*

THE EDITORS.

FOOD INDUSTRIES

The Journal Devoted to the Problems of the Food Manufacturer

LAURENCE V. BURTON, *Editor*

M. A. WILLIAMSON, *Publishing Director*

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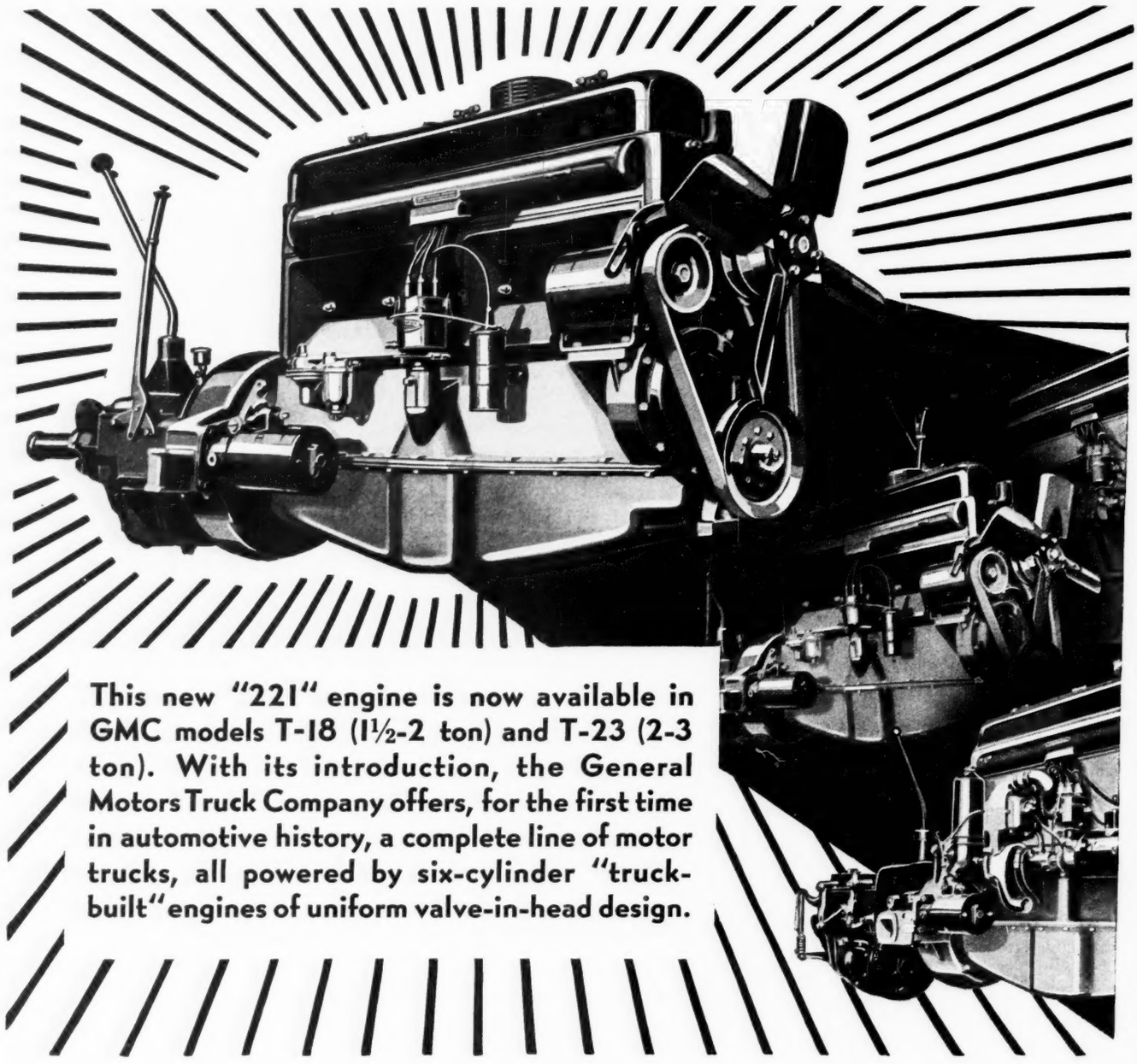

This new "221" engine is now available in GMC models T-18 (1½-2 ton) and T-23 (2-3 ton). With its introduction, the General Motors Truck Company offers, for the first time in automotive history, a complete line of motor trucks, all powered by six-cylinder "truck-built" engines of uniform valve-in-head design.

Features of the 1933 Engine Line

Eight great engines are pictured on this page. They range in cubic inch displacement from 221 to 707; in horsepower, from 69 to 173; and in torque, from 155 to 550 ft. lbs. They are uniform in design, uniform in the standards to which they are built, uniform in their ideal graduation of size and power; and they also possess in common, one great outstanding characteristic—unsurpassed engine efficiency—because every 1933 GMC engine provides more sustained torque per cubic inch displacement than does any other truck engine built.

Contributing to this spectacular achievement are many features of advanced engineering design and construction.

But only an actual demonstration can tell you how much these improvements will mean to you. Get that demonstration today!

GENERAL MOTORS TRUCKS

General Motors Truck Co. *(A Subsidiary of Yellow Truck & Coach Mfg. Co.)* *Time Payments Available*

FOOD INDUSTRIES

The Journal Devoted to the Problems of the Food Manufacturer

Volume 5 . . . . . Established 1928—McGraw-Hill Publishing Company, Inc. . . . . Number 2

NEW YORK, FEBRUARY, 1933

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Laurence V. Burton, Editor

Looking a Year Ahead

GOOD BUSINESS is more than manufacturing and selling foods at a profit. Efficient plants, close buyers, and aggressive selling methods, backed up by plenty of advertising and sales promotion, admittedly are a great help toward the desired profits; but good business requires more than all these aids.

• MANAGEMENT must be endowed with enough vision and foresight to discern the signs of the times and adapt its affairs to the inevitable. The best organization in the world cannot buck the trend of events indefinitely. An old adage that "only a game fish swims upstream" is only a half truth as applied to the management of a business.

• COMING EVENTS nearly always cast their shadows before. Those who interpret the times correctly may take advantage of the trends, rather than oppose them. To foresee events is not easy, however, for much careful study is required. Still more study is needed to devise the tests which will show the accuracy of a forecast. And beyond all this is required that business acumen which not only knows what to look for in the future but what to do with it in order to convert the trends of events to profits.

• A SUBSTANTIAL PORTION of this issue is devoted to an estimate of raw-material production in 1933. These materials for subsequent food manufacture are intimately interwoven with the economic problems of agriculture. Sound planning must concern itself with more than the single element of raw materials for a given plant or industry, because other raw materials in the hands of other kinds of manufacturers may serve to satisfy the great national appetite for food.

• THE MARKET for human foods in the United States is definitely known to be about 132,000,000 tons. Food processors have no control over the raw-material supply, and frequently if one concern or group refuses to manufacture a proffered raw material, another stands ready to do so. The big questions today are: Who will feed the nation, and how will they make a profit doing so?

• HE who desires to be bigger than his day-to-day job has two tasks to perform. He must first study his own industry, its raw material and economic trends, using facts not only from the following pages but also those from *all other available sources.* The second, but not less important, task remains of studying every other major food group in order that he may grasp his own problem in its proper relation to the competitive national or international situation.

• MANY a heroic decision must be made this year—decisions which would be easier to make were this perspective clearly perceived. And they would be still easier if the future of raw-material production were known. The decision obligation rests primarily on management, but no reader of these pages is too far down the line to profit by preparing now to make the decisions that must some day come from him.

What Will America Eat in 1933?

Summarizing a few of the more important economic problems of the food industries. What foods will be most plentiful? What will be the cheapest? Will surpluses continue to pile up and foster new competition? What will the parity plan do? Is there a chance for a price rise? What will weather do? General information given in these pages will not be repeated under each special subject.

EVERY executive in any branch of the industry knows that the dominant economic factor at the moment is the general economic condition which surrounds unemployment. And none can fail to realize that the problems of agriculture are nearly equally important, even for those divisions of the food industries which do not have direct contact with the farmer either as a purveyor of raw material or as a first-hand customer.

Quantitative relations of the different groups of the American population have been much discussed recently. Very often the pictures presented to the industry have been misleading and distressing because they are based solely on dollar comparisons. But perhaps a more precise understanding can be had by dealing with the goods involved rather than with the dollar values.

Food always has been one of the major divisions of the manufacturing industry in the United States. During the present depression period it is more than usually important. In 1931, the last year for which full returns are available, the f.o.b. factory value of products of food plants exceeded 20 per cent of the total value of all manufactured goods. This is a striking increase above the 17 per cent of 1929. A similar evidence of the stability of the food industries is found in the transportation statistics of the country. While all other divisions of railroad freight have been declining by large percentages, the railroad demand made by the food industries has been reduced by less than half as great a percentage. This, of course, reflects the fact that food consumption even in depression periods declines much less than the consumption of almost any other type of commodity.

Agriculture, the original source of all food raw materials, has suffered the most severely of any major division of American activity. The gross income of farmers in 1929 was approximately 12 billion dollars. In the succeeding years it has dropped steadily to 9 billion, to 7 billion, and now for 1932 to 5 billion. To be sure, much of the decline has been in the value of cotton and of other non-food commodities. But in three major food groups—grain, meat animals, and dairy products—the income shrinkage has been approximately a billion dollars each for the 3-year interval.

The low cost of raw materials for food manufacture places a new emphasis on the importance of processing costs and overhead. In this connection, census returns for 1931, the latest available, are somewhat encouraging (see page 62). The value added by manufacture—that is, the difference between major direct costs and the f.o.b. factory sales price—has declined nearly 40 per cent for all manufacturing industry. In the case of the food industries, the decline has been only about 20 per cent. Thus the profit opportunity, if not the profit itself, has been maintained more nearly stable for our group than for any other major class of manufacturing.

Agricultural Relief Measures

Sound economic considerations, quite as much as political desires, justify the effort to afford nationally some proper measures of agricultural relief. Agriculture cannot indefinitely continue to buy when it sells its products at relatively such low prices as have recently prevailed. It is to be expected that an effort will be made to restore the buying power of the farmer by somehow stimulating a rise in the price of agricultural products. Let it be understood, however, that it is no more feasible to repeal the laws of supply and demand governing goods movement than it is to repeal the laws of gravitation!

In the following pages, where there are proposed brief résumás of trend factors affecting raw materials, some attention has been given to the artificial influence of farm-relief legislation. That factor may well become within the next few months a dominant one affecting both supply and price. At this time it appears that the lame-duck session of Congress will not succeed in enacting legislation on this subject which will either meet presidential approval or be attractive enough to pass over presidential veto. Hence most of the technical and economic considerations, other than congressional action, should prevail without effective or prominent influence of these news laws for some months to come.

It must not be forgotten, however, that *the mere discussion of farm relief* introduces a psychological disturbance in every market which traders may believe will be affected by the proposed law. That this is an important influence today is shown by the extremely low stocks of many types of manufactured goods which are held by producers, traders and users.

Back to the Farm

The percentage of the total population living on farms had been declining steadily through recent years until the present period of depression became serious. In the past two years there has been a very definite movement back to the farm. This movement is of two classes. Many young people are returning "home," because while unemployed in the city they find the farm a refuge against distress. Many families are moving as a whole to farms in the hope that a mere existence plan can be developed where at least the family will have shelter and self-raised food supply. The combination of these two influences has, it is estimated, restored the farm population almost, if not quite, to the level a decade ago.

Several results of this movement directly affect the food manufacturing business.

1. There is the removal of a town consumer to a farm location where a larger percentage of his food naturally comes directly from the land and a lesser percentage via the factory.

2. There is a tendency for the increased farm population to grow more for sale, especially of those non-processed foods that enter to a relatively small degree into commercial trade.

3. There is an influence that is perhaps more important to the food manufacturer than any other; it is the tendency to home or neighborhood production of processed foods. There is clear evidence of this in the large increase of custom milling of wheat. The home slaughter of animals and killing by local butchers and slaughter houses that had

appeared to be doomed to extinction is also notable. It is even asserted that home churning of butter and home-made cheese are becoming significant in some of the divisions of the dairy-products business. Certainly all of these factors together, combined with the return to the practice of barter, are taking a small but significant percentage of the total market away from certain classes of manufactured foods made in wholesale factory fashion.

This back-to-the-land movement is to be regarded as a trend which will reverse itself whenever the exchange value of farm crops will permit the farmer to buy more of the products of urban industry. Our guess is that when the *Business Week* index reaches 95, the movement back to town will begin —particularly if it happens to coincide with the approach of winter.

Transportation

Transportation is vital to food supply; and food is of outstanding importance to railroad and truck freight incomes. While all revenue freight has been declining by approximately 25 per cent and railroad freight revenues by 30 per cent, the decline in tonnage for the products of agriculture, for livestock, and meat products has been only about 15 per cent from the peak of 1928. In the case of animals and animal products, the revenue has declined less than 10 per cent.

Forecasts made by boards of shippers in various regions working with the American Railway Association indicate an anticipated further decline in car requirements during the first quarter of 1933; much less in percentage for most food raw materials than for many of the other classes of freight. The composite judgment of the industry as to early 1933 is that food raw materials and manufactured foods will be moved by rail approximately in accordance with the following tabulation.

Estimated Decline in Freight Car Requirements for Foods

(First Quarter of 1933 Compared with Same Quarter of the Year Before)

Commodity	Estimated Change, Per Cent
Grain	— 3.9
Flour, meal, and other mill products	— 3.7
Cottonseed and products, except oil	— 8.6
Citrous fruits	+16.4
Other fresh fruits	— 6.4
Potatoes	— 7.0
Other fresh vegetables	—11.6
Livestock	— 7.8
Poultry and dairy products	— 6.5
Sugar, syrup, and molasses	+ 2.9
Canned foods	— 8.3

In contrast with these figures are estimated increased activity in handling cotton, automobiles, and chemicals, but declining rail activities for all other industrial classes of the goods considered. The declines forecast range up to 22.5 per cent.

International Political Factors

One big uncertainty is the international political situation which arises out of the war debt problems and affects the price structure and supply-demand relationship of food crops throughout the world by fostering the insane campaigns for national self-sufficiency in nearly all European countries. The fact that there exists an array of artificial international trade impediments is less of a forecasting problem than the very uncertainties of their continued existence. Events which may follow the inauguration of the new administration may completely alter the economic status of several commodities. Wheat and fats and oils are particularly subject to this uncertainty.

At the present time, the case of fats and oils affords a peculiarly conspicuous example of the necessity of studying these artificial man-made factors. There are, for example, demanding attention: tariffs; embargoes; import quotas; requirements as to admixture of foods (e.g., butter in margarine in Germany); compulsory change in food habits because of actual shortage of customary food supplies, usually the result of an embargo; and price relationships distorted by these and other special types of trade restrictions.

Then, too, one must consider in the United States particularly such things as the Philippine independence act. As a matter of fact, the influence of Philippine independence on fat prices probably has been greatly exaggerated. It is undoubtedly true that no material change in tariffs from the present levels can be expected under this legislation. And the legislation seemingly permits free import into the United States of copra, and thus leaves an adequate loophole for the users of coconut oil to secure it substantially duty free, even though utlimately the Philippine Islands as an independent nation might be compelled to send its vegetable-oil materials in over a tariff wall as high as that affecting any other nation.

Appraisal of price trends and United States supplies of food raw materials is at all times difficult. Today such forecasts are even more complicated than ever before. Despite that difficulty and the certainty that any precise forecasts are impossible, FOOD INDUSTRIES undertakes in the following pages to present the outlook for some of the major groups of commodities of interest to food manufacturers. Again it is emphasized that each executive should consider all of these commodities and undertake, in so far as he can, to weigh all the factors affecting each. Such study of the problems of our industry as a whole will result in a keener appreciation of the basic trends. Having gained a knowledge of what factors enter, and the direction of their influence, it then is possible for the individual manufacturer to study new information as it develops from week to week during the coming year, and apply sound reasoning to his individual plant or commodity problems.

Acknowledgment

It is a pleasure to acknowledge the very great aid afforded by source material from the Bureau of Agricultural Economics and the helpful cooperation of numerous specialists on the bureau's staff which has been so cordially afforded to us in the preparation of the following summaries on raw materials. FOOD INDUSTRIES has drawn liberally from this material and from the summaries recently issued by the Bureau of the Census giving data on manufacture of food commodities during the last census year.—Editor.

Weather Very Important

In all estimates of probable agricultural production in any year the weather factor is more important than all others. And it is of greater importance in years of low prices than in years of prosperity, because in a year like 1932 there will be very little fertilizer used on farms. Fertilizers, which somewhat offset the unfavorable effects of weather, are sold in large quantity only after prosperous years—not after disastrous years.

FOOD INDUSTRIES has been carrying on a lengthy study of astronomical data, particularly the variations of solar radiation, which many believe to be the important cause of weather and climatic changes from year to year. We had hoped that it would be possible to publish our study of this basic data along with our commodity forecast, but it requires further work before it can be utilized in commodity production forecasting. About all we can say at the present time is that the solar radiation constant has been above normal for the past two years, and that on Jan. 1, 1933, it was almost down to normal.

Weather exerts a tremendous effect not only on production but on consumption, with interesting ramifications in the economic well-being of the nation. Students of long-range weather forecasting predict a colder, wetter year than 1931 or 1932. In fact some go so far as to predict that the period from 1933 to about 1944 will be slightly colder and wetter than the preceding decade. And in the meantime the professional forecasters of the Department of Agriculture are much amused.

Why Curves?

For the most part the data relative to the several raw materials covered are presented in chart or curve form so that important relationships are disclosed as well as possible significant trends that will enable the reader to interpret them in terms of his own business. Curves are introduced not to substantiate the forecasts but to enable readers to interpret future events.

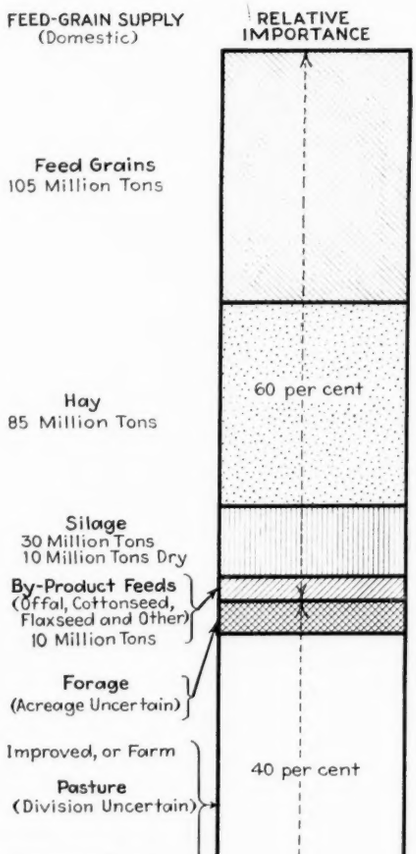
Pasture, Feed and Grain

OUTLOOK FOR 1933

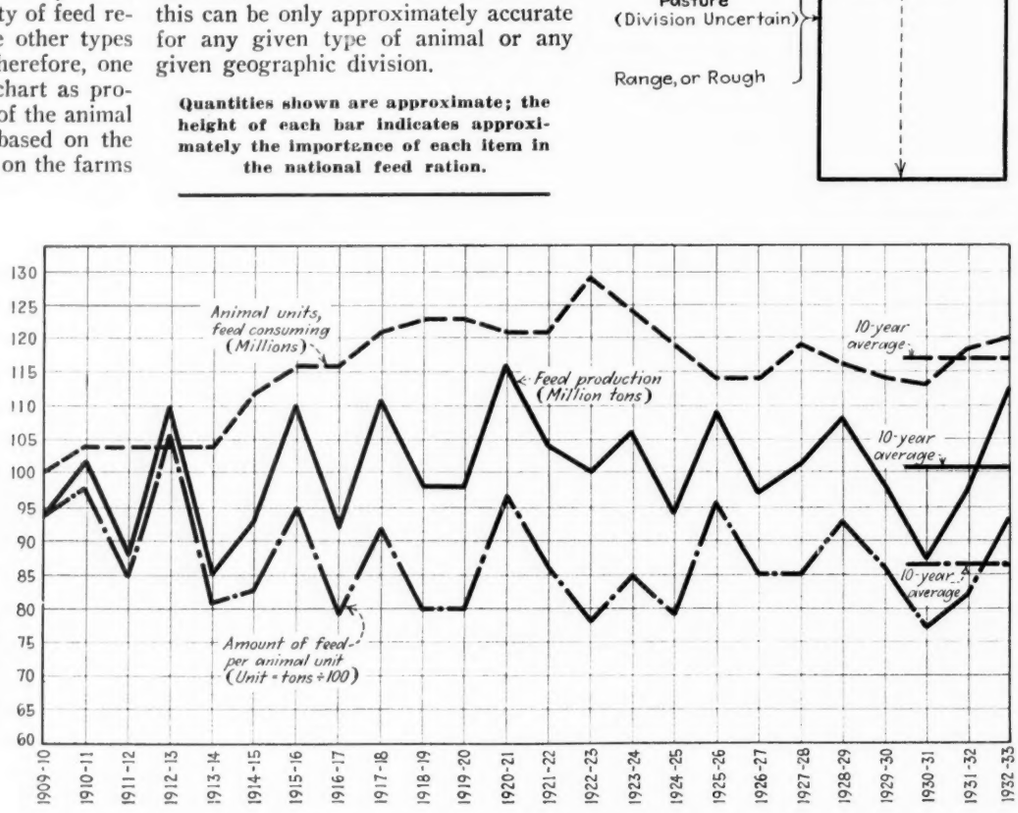
IN BEGINNING an estimate of the probabilities of production of raw materials for the food industries in 1933, the first consideration is the situation in pastures, as well as feeds and grains that will be used for animal feeding. These primary raw materials reach the food plant only as hogs, sheep, cattle, milk, poultry or eggs, and the number of units of livestock that will be raised or will be marketed depends to a certain extent on the supply of feed, as well as the prices obtainable. The price stimulus, however, is not the primary purpose of this study. Attention is directed largely to the supplies of feed, both existing and probable, that will be available for livestock consumption and to their probable influence on production.

For simplicity the whole is reduced to the equivalent of the feed requirements of a single dairy cow. Thus, 0.87 hog equals one cow, 8 to 8.5 sheep equal one cow, and so on, according to the feed in question. The accompanying charts are all based on these relationships. In them, the number of animals is indicated; however, the dimension of each part of the chart is not proportional to this number but rather is proportional to the calculated number of dairy cattle which would eat the quantity of feed required by the totals of the other types of animals. Graphically, therefore, one can consider parts of the chart as proportional to the feed needs of the animal population in each group based on the *average* number of animals on the farms in recent years.

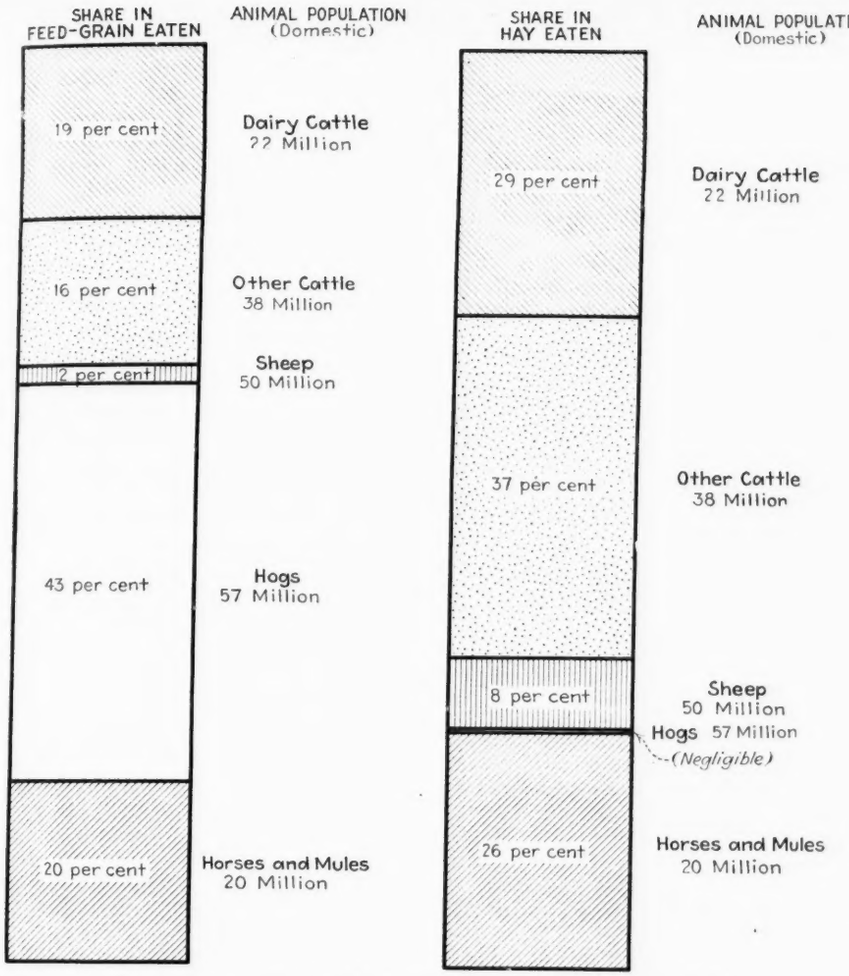
The value of different materials in the feed ration varies considerably. To some extent, all feeds are interchangeable; but this is not wholly true, because hay and forage serve quite a different function from corn or cottonseed meal. Furthermore, a properly balanced ration for one kind of animal may be essentially different from that for another. It is impossible, therefore, to make up any single composite national ration and have it correct for all types of animals. The composite shown not only brings together a variety of feeds, more or less on their feeding value usefulness, but it also makes allowance, as accurately as is practicable, for the several kinds of animals involved. When viewed in this way, it has one very important significance that could not otherwise be attained. The height of the column showing each individual feedstuff is approximately in proportion to the importance of that material in the entire feed supply of the country. Thus, one can judge whether a given percentage change in the supply of one feedstuff is more or less important nationally in its effect on animal supply than the same percentage change in another would be. However, all of this can be only approximately accurate for any given type of animal or any given geographic division.



Quantities shown are approximate; the height of each bar indicates approximately the importance of each item in the national feed ration.



Feed production is in millions of tons, animals in millions of units, on a basis equivalent to dairy cows; and the supply per animal is in tons per year per animal unit.

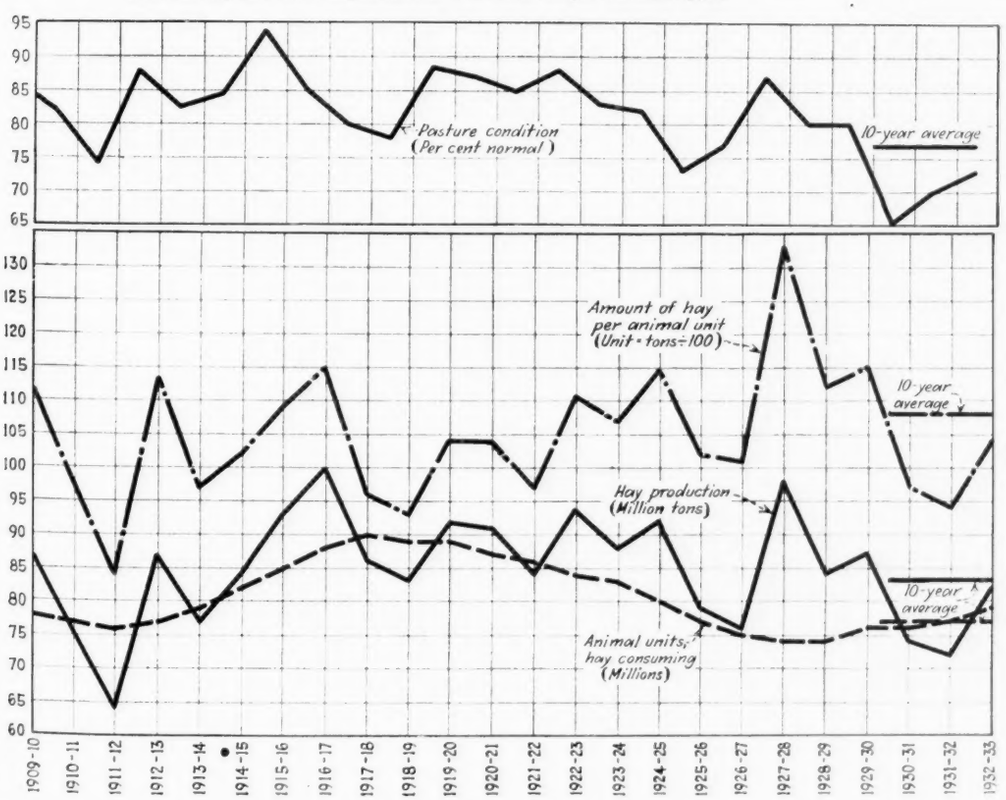


The various types of animals consume feed grains and hay in approximately the percentages indicated. The estimates are based on average for January animal populations for five years past, and on typical feed requirements for each major animal type.

TRENDS

AT THE END of 1932, the stocks of feeds and the pasture prospects indicated an abundance of all types of animal feed for the coming season. This is true despite an unusually large cattle, hog and sheep population (see page 48). Hence, on the score of feed supply there is no prospect during 1933 of shortage of animals or of high cost for feeding or finishing for market unless there should be a markedly adverse growing season. The unusually high ratio existing at the present time between market price of hogs and the farm price for grains suggests an incentive to increased breeding rather than a curtailment of hog production, but there is no evidence that this will result in exessive movement of hogs to market. The ratio fails to be significant, largely because the absolute values are so abnormally low.

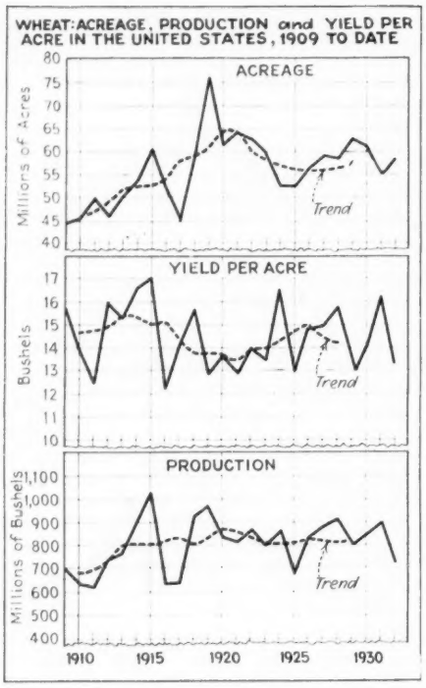
Should there occur a reversal of the general growing weather from the prevailing dry, hot weather of 1931 and 1932 crop years, then pasture conditions should improve. There would also be likelihood of a simultaneous decrease in production of certain feed grains because of cool, rainy weather, which might result in rotting of seed if it occurred at planting time. In no case, however, does this indicate any shortage of grains, such as corn, oats or barley, although there may be diminished production, nor does it indicate any material increase in their price levels *relative to other agricultural commodities*, except as artificial farm relief measures may enter.



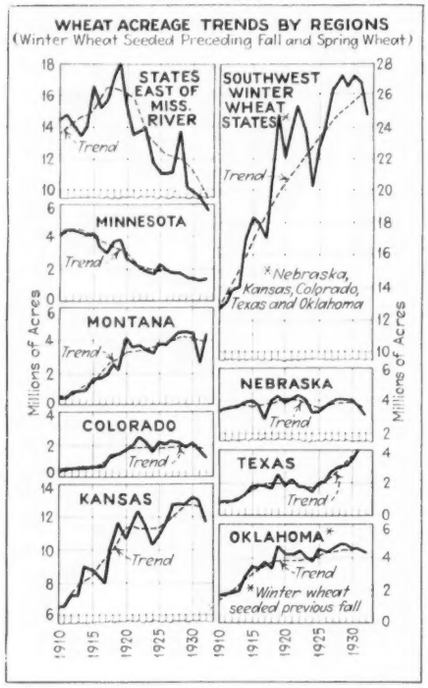
Pasture condition is the average for the grazing season, May to October inclusive, for each year, expressed in percentage of "normal," or a perfectly satisfactory pasture.

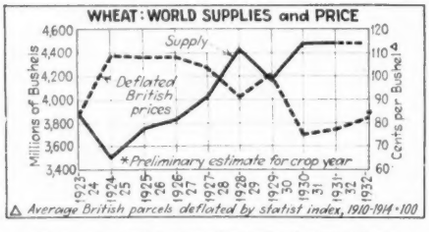
Hay production is in millions of tons, animal units calculated in equivalent dairy cows according to hay-eating habits; and the supply per animal unit is in terms of tons per animal per year.

Wheat, Flour and Cereals



General trend in production depends largely upon acreage. Average area harvested in 1926-31 is 22 per cent greater than in 1895-99.




WHEAT: WORLD SUPPLIES and PRICE
Supply
Deflated British prices
*Preliminary estimate for crop year
Millions of Bushels
Cents per Bushel
△ Average British parcels deflated by statist index, 1910-1914=100

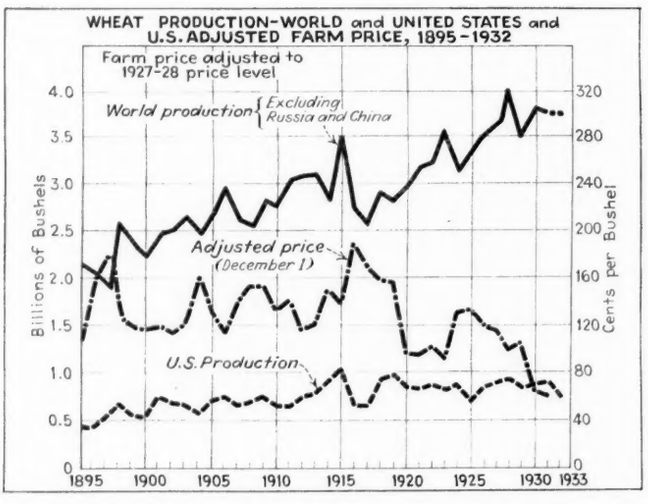
Size of world crop largely determines prevailing price in normal years. The indicated prices are of wheat in Great Britain adjusted for changes in purchasing power of money converted at par.

WHEAT, the master food grain, is a world commodity. Production, stocks and prices of the world must be considered in appraising the United States situation, although at present the United States appears to have a slight advantage in prospects. .

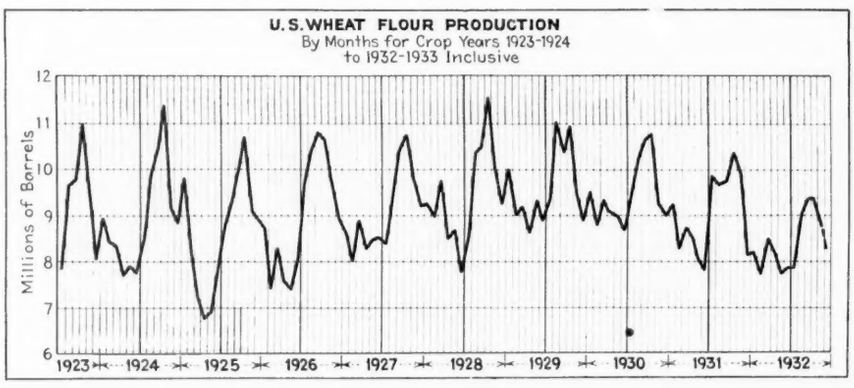
Until recent years, Russia and the United States, with about equal wheat production, were dominant factors in world supply. The Russian collapse during the World War removed that country as a major producing factor until about 1925, and it did not become again an important export factor until after the 1930 crop was gathered. Now Russia produces wheat crops about equal to those of the United States; and as a new factor in the situation is the combined increase in production of Canada, Australasia, and Argentina, which together produce quantities about equal to the United States crops. Despite any type of farm-relief effort, the United States producer or user of wheat must therefore look at the whole world in all matters except price. As to price, he is subject to world influences, with the political tinkering on economic law an added uncertainty.

Among the importing countries Cuba, Germany and Czechoslovakia are lessening the demand for wheat flour by laws making compulsory the use of increased quantities of cassava, potato and rye flours. In England the demand for middlings and bran for cattle feed, aided by government regulation of flour importation, is encouraging the breeding of a stronger domestic wheat.

The flour miller is not alone concerned in these matter of wheat supply and price. The bread maker, biscuit and cracker manufacturer, macaroni maker and numerous minor users of flour must give attention. Furthermore, wheat and flour price trends largely affect also the maker of cereal breakfast foods, cereal beverages, and the millers or processers of oats, rye, barley and corn. Even the feed market and the feed user must give attention to wheat-price vagaries, as these interlock with feed-grain price.



Upward trend in world wheat production has been steeper since the war-period low in 1918 than during the previous 20 years. United States production has been about constant but is still on export basis.

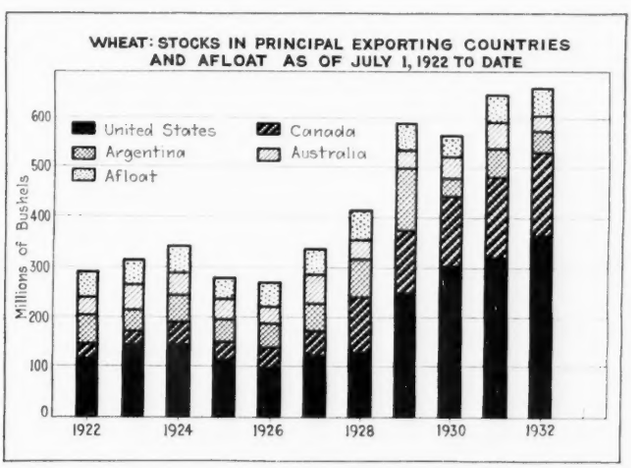


Wheat and Flour Trends

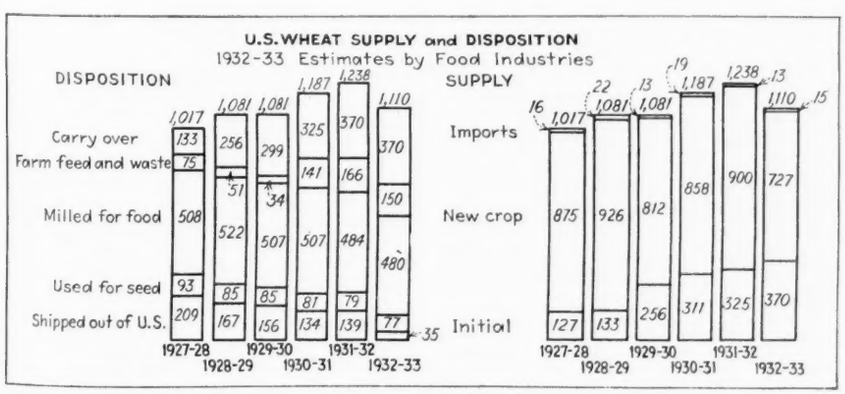
WHEAT stocks of the world are at this time larger than even the record stocks of a year ago. Large crops in the Southern Hemisphere indicate a slight tendency toward increased stocks. But prospects of restricted winter wheat yield in the United States promise a favorable influence in reducing the United States stocks significantly. Shipments of wheat, a fair measure of consumption in importing countries, have declined sharply during the first six months of this wheat year to 260,000,000 bushels, compared with 360,000,000 during the corresponding period of the preceding year.

Per capita disappearance of wheat for food in the United States has fallen markedly over several decades. Apparently the decline from 1931 to 1932 was the largest decrease in per capita use of wheat in the United States in any recent year, being about 4 per cent. This appears to mean primarily a decline in wheat-bread consumption, an effect which many dietitians have not thought consistent with the desire to buy foods of the lower unit-cost in a depression period.

During early 1933, as indicated in the accompanying charts, it is estimated on the basis of government figures that a smaller new winter-wheat crop will more than offset the unusually high carryover, making the total supply available approximately 10 per cent less than for the present wheat year ending July, 1933. Seed requirements will be slightly curtailed. Exports and shipments to non-contiguous United States territory will be only 40 per cent of those of last year and less than a quarter of the total of some recent years. The disappearance for food presumably will be no greater and the feed usage certainly will be curtailed because of the abundance of competing feed grains available at very low price. As a result it is now estimated that on July 1, 1933, the carryover into the next wheat year will be nearly the same as that into the present season, perhaps less by a few million bushels.



1932 stocks are more than twice average stocks in the years 1922 to 1927. Greater part of increase has been in the United States and Canada. Stocks in Argentina and Australia have shown little change.



Kind, Quantity, and Value

(The figures for 1931 represent production; those for 1929 refer to sales (shipments or deliveries) by manufacturers)

FLOUR AND OTHER GRAIN-MILL PRODUCTS

	1931	1929	Per Cent Change
	(In thousands)		
Total value made:			
In all industries	$593,221	$1,040,185	—43.0
In milling industry	567,400	995,911	—43.0
In other industries*	25,821	44,275	—41.7
Wheat flour:			
Total barrels (196 lb.)	114,824	120,040	— 4.3
Total value	$449,244	$737,309	—39.1
White flour:			
Barrels	106,178	113,034	— 6.1
Value	$411,380	$691,243	—40.5
Graham and whole-wheat:			
Barrels	3,078	1,362	+126.0
Value	$11,523	$8,416	+36.9
Semolina:			
Barrels	2,883	2,959	— 2.6
Value	$12,065	$16,895	—28.6
Prepared flour:			
In all industries, bbl.	4,607	5,473	—34.1
Value	$29,130	$42,370	—31.2
In milling industry, bbl.	2,684	2,684	
Value	$14,276	$20,755	—31.2
Rye flour:			
Barrels	1,546	1,679	— 7.9
Value	$5,301	$9,179	—42.2
Corn flour:			
Barrels	187	589	—68.2
Value	$600	$3,121	—80.8
Buckwheat flour:			
Pounds	31,092	38,453	—19.1
Value	$961	$1,570	—38.8
Other flour:			
Pounds	31,694	21,091	+50.3
Value	$829	$782	+ 6.1
Corn meal:			
Barrels (200 lb.)	8,675	10,488	—17.3
Value	$27,356	$52,400	—47.8
Bran and middlings:			
Tons (2,000 lb.)	4,796	4,682	+ 2.4
Value	$72,597	$141,985	—48.9
Feed, screenings, etc.:			
Tons	1,543	2,472	—37.6
Value	$36,333	$93,840	—61.3

CEREAL PREPARATIONS

Total value made:			
In all industries[1]	$138,719	$168,708	—18.0
In "cereal" industry	110,505	131,354	—16.0
In other industries*[1]	28,214	37,354	—24.0
As breakfast foods	103,319	121,107	—15.0
Made from wheat:			
Pounds	(2)	(2)	
Value	$37,623	$47,386	—21.0
Made from oats:			
Pounds	873,262	718,382	+22.0
Value	$30,321	$36,419	—17.0
Made from corn:			
Pounds	386,913	383,867	+ 1.0
Value	$22,613	$27,458	—18.0
Made from other grains and mixed grains:			
Pounds	93,941	58,365	+61.0
Value	$12,762	$9,843	+30.0
Prepared flour:			
Pounds	779,582	1,002,399	—22.0
Value	$29,734	$39,076	—24.0
Coffee substitutes:			
Pounds	13,360	19,816	—33.0
Value	$2,623	$5,253	—50.0
Other cereal preparations, value	$3,043	$3,272	— 7.0

[1]Estimated. This amount is distributed among most of the items in this column and therefore these items are estimated in small part.

[2]Some reported in number of packages and others in pounds.

MALT

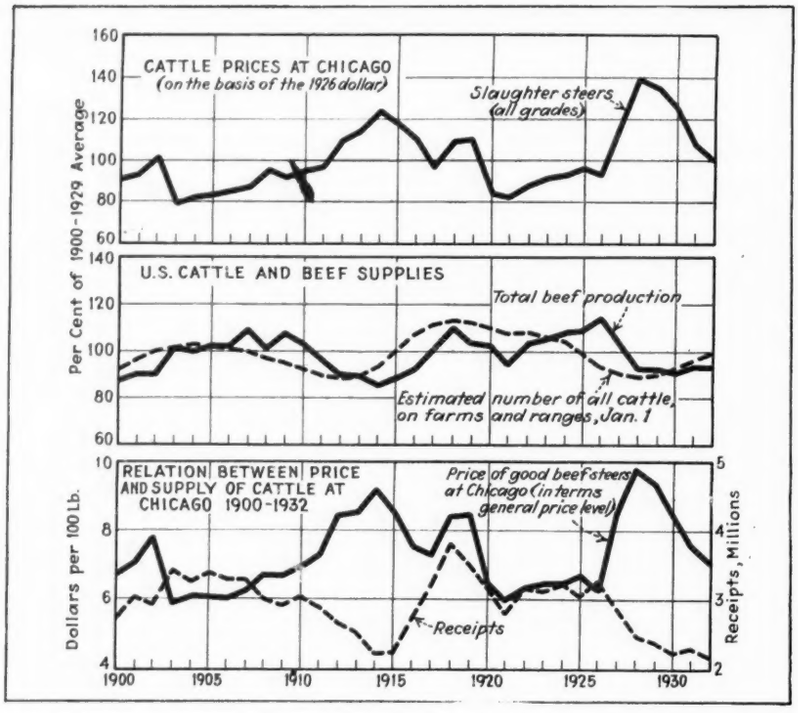
Barley malt:			
Bushels	23,686	25,850	— 8.4
Value	$17,695	$20,707	—14.5
Rye and wheat malt:			
Bushels	141	80	+76.1
Value	$129	$110	+16.9

PREPARED FEEDS FOR ANIMALS AND FOWLS

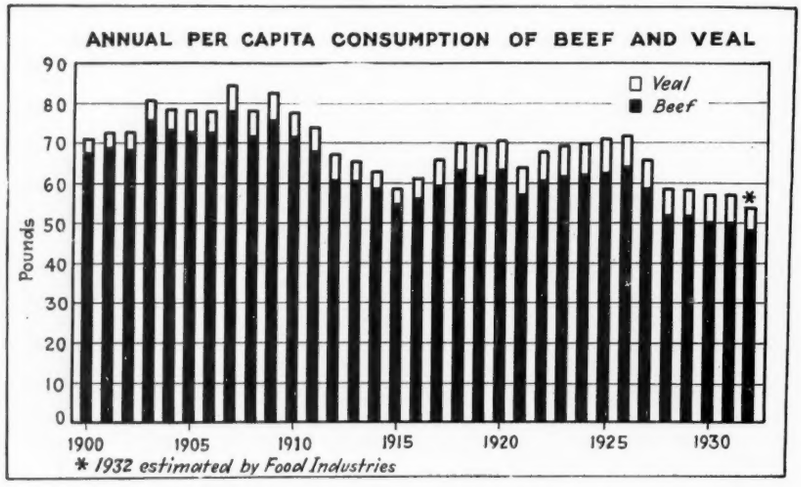
Total value made:			
In all industries	$254,525	$494,516	—48.5
In "feed" industry	192,599	366,673	—47.5
In other industries*	61,926	127,843	—51.6
Chiefly from grain:			
Tons	5,671	7,353	—22.9
Value	$176,002	$331,221	—46.9

*As secondary products.

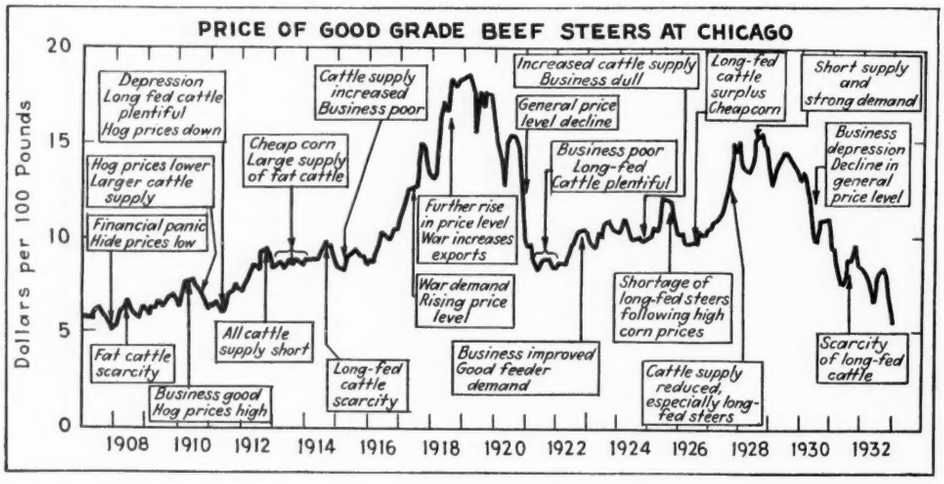
Livestock



Abundance of cheap grain and feed encourages withholding of beef steers from the market. Low consumer demand keeps beef from following upward trend which has characterized previous periods of low market offerings.



Note the swings of the curves of consumption, which are also manifested in other curves on this page. Although the trend is downward, if history repeats itself the per capita consumption will increase in 1933 or 1934.



A long-time graphic history of technical factors affecting the price of "good" beef steers at Chicago. Always remember that the price is only a reflection of willingness of public to buy

LIVESTOCK of importance to the food industries are cattle and calves, sheep and lambs, and hogs. Each group must be separately considered from the standpoint of raw material for meat supply, but in matters of price and inter-food competition the group as a whole reacts to many common influences. Only a few of the outstanding factors affecting livestock numbers, slaughter and prices can be here considered statistically. From the standpoint of food competition, especially of meat substitutes, it is much more important to consider some of the major products of the meat-packing industry. Readers are also referred to pages 81 and 97, March, 1932, for more extended discussions.

Slaughter of cattle and calves during 1932 was approximately 5 per cent below the preceding year; and in the case of cattle, 10 per cent below the previous five-year average. The low slaughter, despite high animal population at the beginning of the year, was a reflection of the very low absolute price for stock on the hoof. The usually dominant ratio between animal price and feed price ceased to be alone significant, because freight to market was more than ordinarily important in determining net yield to the animal producer. Furthermore, the slaughter included very few cows, another evidence both of the importance of freight rates retarding the marketing of lower priced animals and of the subnormal culling of dairy herds.

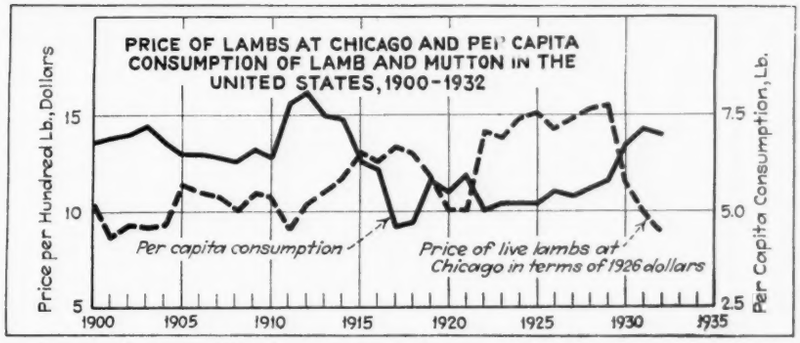
Inspected hog slaughter in 1932 totaled 45,200,000 animals, just 1 per cent greater than the preceding year and 1 per cent lower than the previous five-year average. It is expected that the slaughter in 1933 will be

And Meats

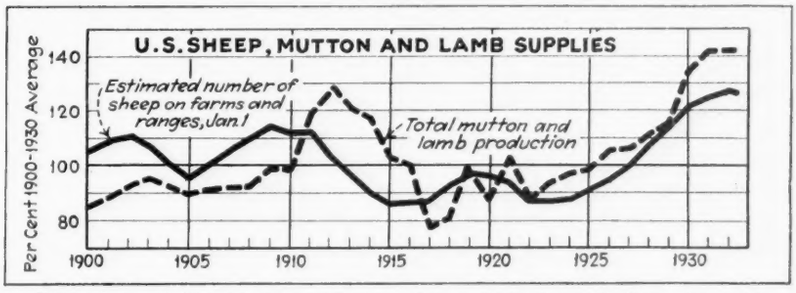
slightly less in number of hogs; but the live weight at market is increasing very materially in recent months, indicating a total weight of slaughter at least equal, or perhaps slightly greater, in 1933 than 1932. A secondary result which now almost inevitably comes from extremely low feed prices is a lard production greater relative to dressed pork production than has been customary. In recent months this yield has been greater by nearly one pound of lard per hundred pounds of finished pork than in the corresponding season of the previous five years. The result unquestionably is going to be a changed ratio between pork and lard prices.

No material increase in foreign demand for either pork or lard is expected in 1933. Foreign hog population is now less than in the recent past, which would tend to create demand for American exports; but embargoes, import quotas and high tariffs imposed by the principal importing countries are more important, and actually are retarding foreign consumption of American hog products (see also FOOD INDUSTRIES, page 249, on Fats and Oils, and March, 1932, page 97, for general charts on hogs and pork).

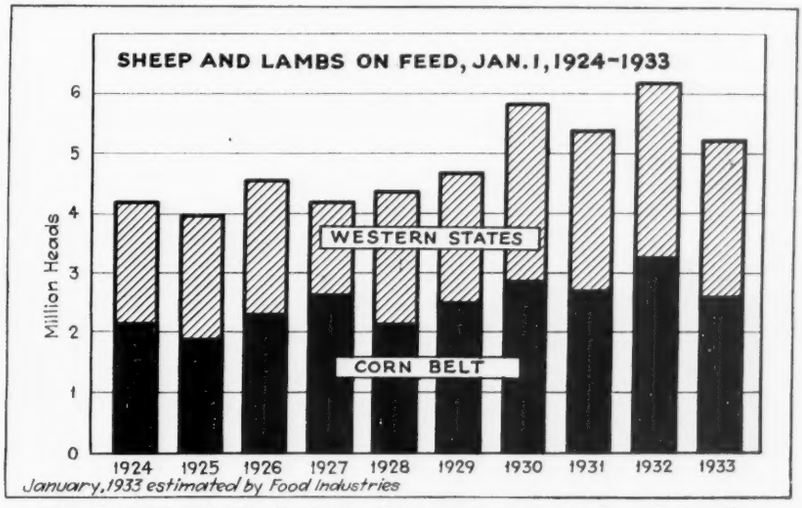
Sheep and lambs slaughtered in 1932 were slightly fewer in number than the slaughter of the preceding year, but exceeded by nearly 20 per cent the average slaughter of the past five years. This effect was partially offset by the slight decline of about 1 per cent in the average dressed weight of meat per animal. The present large sheep and lamb population on farms, combined with abundant pasture and very low feed grain prices, promises continued large slaughter, but probably less in 1933 than the record of recent years.



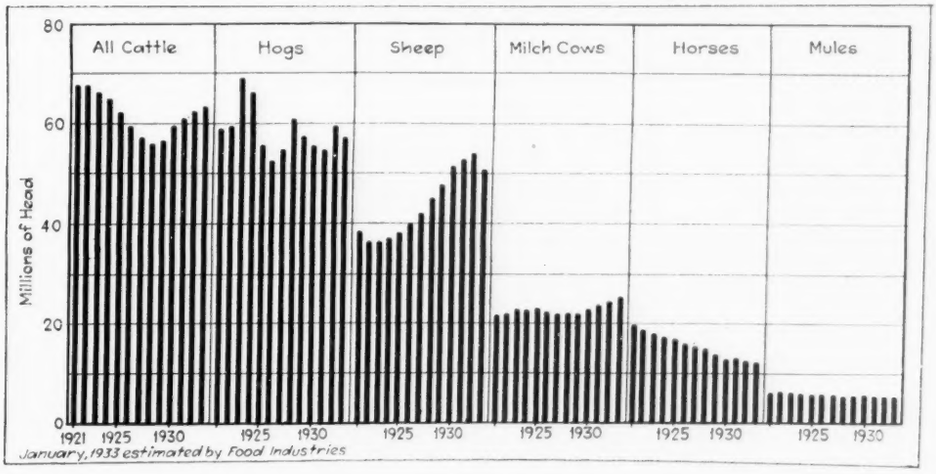
Decreased consumption due to lower consumer purchasing power has added impetus to the downward trend of lamb prices caused by unusual increase in number of lambs available for consumption during 1930 and 1931



Following out the 10-year cycle in sheep and lamb production, the next few years should see a steady decrease in number of lambs produced. A return of marginal farms to grazing land may shorten this cycle



The effects of exceptionally low pork prices on consumer demand for other meats and of drought on grazing are reflected in the decreased number of lambs and sheep on feed for 1933 marketing.



Number of hogs and sheep on farms reflect market conditions more directly than do number of cattle, because their production cycle is of shorter duration. Refusal by dairymen to cull their herds has added to cattle on farms since 1928

Meat Production

Kind, Quantity and Value

MEAT PACKING PRODUCTS

	1931	1929	Per cent change
	—In Thousands—		
Total value	$2,177,237	$3,434,654	—36.6
Fresh meat:			
Total value	$1,175,358	$1,780,843	—34.0
Beef—			
Pounds	4,546,214	4,575,492	— 0.6
Value	$542,423	$859,803	—36.9
Veal—			
Pounds	530,266	511,103	+ 3.7
Value	$67,578	$107,197	—37.0
Mutton and lamb—			
Pounds	771,950	601,719	+28.3
Value	$116,763	$145,416	—19.7
Pork—			
Pounds	3,462,684	3,571,277	— 3.0
Value	$403,390	$603,537	—33.2
Edible organs, tripe—			
Pounds	537,217	568,687	— 5.5
Value	$43,587	$63,030	—30.8
Other fresh meat—			
Pounds	29,276	16,383	+78.7
Value	$1,617	$1,860	—13.1
Cured meat:			
Total value	$460,792	$748,418	—38.4
Beef, pickled and other cured—			
Pounds	89,099	71,593	+24.5
Value	$13,235	$21,749	—39.1
Pork, pickled and dry-cured, smoked—			
Pounds	1,202,898	1,295,188	— 7.1
Value	$208,465	$302,925	—31.2
Pork, dry-salted, smoked—			
Pounds	113,259	101,779	+11.3
Value	$17,760	$20,642	—14.0
Pork, pickled and dry-cured, not smoked—			
Pounds	1,008,091	1,271,066	—20.7
Value	$122,703	$231,241	—46.9
Pork, dry-salted, not smoked—			
Pounds	704,420	860,148	—18.1
Value	$61,415	$113,888	—46.1
Cooked hams—			
Pounds	136,560	152,189	—10.3
Value	$37,213	$57,972	—35.8
Canned meat:			
Pounds	91,408	149,582	—38.8
Value	$21,180	$38,114	—44.4
Lard:			
Pounds	1,748,535	2,041,211	—14.3
Value	$149,390	$248,008	—39.8
Oleo oil:			
Pounds	80,421	113,231	—12.4
Value	$4,677	$12,403	—54.1
Oleo stock:			
Pounds	18,771		
Value	$1,013		
Stearin (oleo and other):			
Pounds	28,248	38,543	—26.7
Value	$1,852	$3,819	—51.5
Fertilizer materials:			
Tons	115	135	—14.9
Value	$2,882	$6,230	—53.7
Hides, skins, and pelts (not including sheep and lamb slats or pickled sheep and lamb skins):			
Total value	$53,890	$109,023	—50.6

	1931	1929	Per Cent
Total value	—In Thousands—		Change
Cattle hides, cured—			
Number	8,512	7,440	+14.4
Pounds	454,514	399,682	+13.7
Value	$34,712	$62,707	—44.6
Cattle hides, uncured—			
Number	1,004	2,401	—58.2
Pounds	55,694	133,519	—58.3
Value	$2,924	$17,206	—83.0
Calfskins, cured—			
Number	3,698	2,707	+36.6
Pounds	46,099	35,639	+29.4
Value	$5,470	$7,607	—28.1
Calfskins, uncured—			
Number	1,823	1,283	+42.1
Pounds	21,338	14,935	+42.9
Value	$2,222	$1,683	—17.2
Sheep and lamb pelts, cured—			
Number	11,984	7,523	+59.3
Va ue	$6,628	$13,664	—51.5
Sheep and lamb pelts, uncured—			
Number	2,896	2,935	— 1.3
Value	$1,760	$4,714	—62.7
Other hides and skins, cured and uncured—			
Number	180	346	—48.0
Value	$174	$443	—60.7
Sheep and lamb slats:			
Number	3,448	3,839	—10.2
Pounds	8,709	11,694	—25.5
Value	$658	$2,555	—74.2
Pickled sheep and lamb skins:			
Number	9,947	5,948	+67.2
Pounds	23,371	13,157	+77.6
Value	$1,902	$4,007	—52.5
Wool:			
Pounds	43,930	35,907	+22.3
Value	$12,547	$19,874	—36.9
Hair, hog and other:			
Pounds	15,639	25,947	—39.7
Value	$516	$1,154	—55.3
Miscellaneous products, value[1]	$288,833	$458,421	—37.0

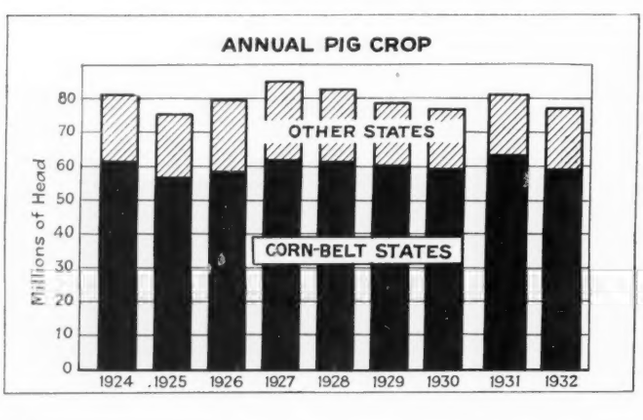
[1] Includes value of sausage, sausage casings, and such products, made in meat-packing industry.

SAUSAGE, MEAT PUDDING, HEADCHEESE, SAUSAGE CASINGS, MISCELLANEOUS

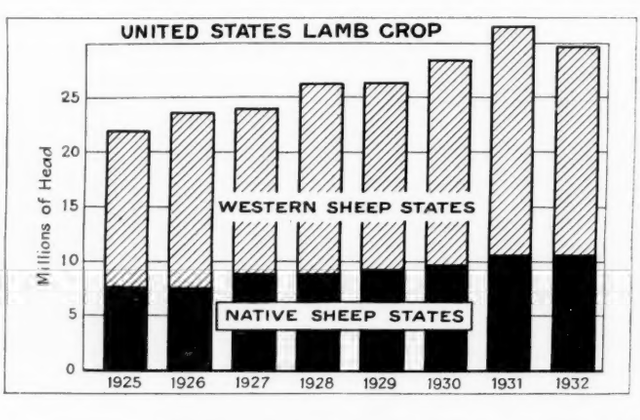
	1931	1929	Per Cent
Total valu	—In Thousands—		Change
Made in all industries	$208,094	$327,499	—36.5
Made in "Sausage, meat puddings, headcheese, and sausage casings" industry	$72,907	$98,081	—25.7
Made in meat-packing industry	$134,879	$227,875	—40.8
Made as secondary products in other industries	$309	$1,544	—80.0
Sausage, meat puddings, headcheese:			
Total pounds	1,210,961	1,332,591	— 9.1
Total value	$194,329	$294,884	—34.1
Fresh sausage, meat puddings, headcheese:			
Total pounds	1,085,123	1,184,210	— 8.4
Total value	$168,220	$252,117	—33.3
Made in sausage industry—			
Pounds	380,106	345,581	+10.0
Value	$61,607	$78,251	—21.3
Made in meat-packing industry—			
Pounds	704,379	831,218	—15.3
Value	$106,518	$172,717	—38.3
Made as secondary products in other industries—			
Pounds	638	7,411	—91.4
Value	$96	$1,149	—91.7
Dry sausage—			
Total pounds	111,756	128,829	—13.3
Total value	$23,511	$38,362	—38.7
Made in sausage industry—			
Pounds	31,659	31,474	+ 0.6
Value	$6,614	$9,456	—30.1
Made in the meat-packing industry—			
Pounds	79,831	97,355	—18.0
Value	$16,833	$28,906	—41.8
Made as a secondary product in other industries—			
Pounds	267	(1)	.....
Value	$64	(1)	.....
Canned sausage—			
Total pounds	14,081	19,552	—28.0
Total value	$2,598	$4,404	—41.0
Made in sausage industry—			
Pounds	627	(1)	.....
Value	$148	(1)	.....
Made in meat-packing industry—			
Pounds	13,455	19,552	—31.2
Value	$2,450	$4,404	—44.4
Sausage casings:			
Total pounds	107,026	176,198	—39.3
Total value	$13,765	$32,616	—57.8
Beef casings—			
Total pounds	32,859	54,192	—39.4
Total value	$3,576	$10,469	—65.8
Made in sausage industry—			
Pounds	6,698	11,314	—40.8
Value	$941	$2,402	—60.8
Made in meat-packing industry—			
Pounds	26,161	42,878	—39.0
Value	$2,635	$8,067	—67.3
Sheep casings—			
Total pounds	22,543	49,893	—54.8
Total value	$3,835	$9,307	—58.8
Made in sausage industry—			
Pounds	11,752	24,622	—52.3
Value	$1,908	$4,183	—54.4
Made in meat-packing industry—			
Pounds	10,792	25,271	—57.3
Value	$1,928	$5,125	—62.4
Hog casings—			
Total pounds	51,623	72,113	—28.4
Total value	$6,354	$12,840	—50.5
Made in sausage industry—			
Pounds	12,179	21,925	—44.5
Value	$1,690	$3,789	—55.4
Made in meat-packing insudtry—			
Pounds	38,453	48,212	—20.2
Value	$4,516	$8,656	—47.8
Made as secondary products in other industries—			
Pounds	991	1,975	—49.8
Value	$149	$395	—62.4

[1] No data.

Cash corn represents only about a fifth of the crop. Yet it influences hog farmers to increase breeding operations when low in relative price; 1932 fall pig crop showed increase; 1933 spring farrowing will likely increase.



Lamb prices have been on a decline for four years. Past experience indicates that 1932 decrease in lamb production will continue for nearly three years after prices turn upward; normally to be expected within 1933 or 1934.



Miscellaneous Statistics

In this section are grouped a few of the commodity statistics pertaining to food production which have not lent themselves to treatment elsewhere in this issue. They are of more than passing interest to food manufacturers and should be included in a statistical study of food production. Others will be published from time to time as space permits.

Although these statistics relate largely to the 1931 calendar year, they were not available until as late as December, 1932, and in most instances have not been previously published.

Peanuts, Walnuts, and Other Nuts, Processed or Shelled*

Total Value	1931	1929	Per Cent Change
	In Thousands		
Nuts processed (bleached, polished, cleaned, graded, etc.) or shelled	$36,423	$51,740	—29.6
Nuts processed or shelled in the "Peanuts, walnuts, and other nuts, processed or shelled" industry, value	$34,999	$46,507	—24.7
Nuts processed or shelled, secondary products in other industries, value	$1,424	$5,233	—72.8
Peanuts:			
Total pounds	366,010	447,500	—18.2
Total value	$22,346	$32,138	—30.5
Cleaned and graded (not shelled) —			
Pounds	90,604	104,787	—13.5
Value	$6,072	$7,641	—20.5
Shelled (raw) —			
Pounds	275,406	342,713	—19.6
Value	$16,274	$24,497	—33.6
English walnuts:			
Total pounds	41,219	56,578	—27.1
Total value	$6,961	$9,855	—29.4
Processed —			
Pounds	34,323	52,043	—34.0
Value	$4,974	$8,368	—40.6
Shelled —			
Pounds	6,895	4,535	+52.0
Value	$1,988	$1,487	+33.7
Pecans, almonds, and other nuts —			
Total pounds	28,531	24,395	+17.0
Total value	$7,116	$9,747	—27.0
Processed —			
Pounds	14,866	9,225	+61.1
Value	$2,061	$2,090	— 1.4
Shelled —			
Pounds	13,665	15,170	— 9.9
Value	$5,054	$7,657	—34.0

Total for 1931	Pecans	Almonds	Other Nuts
	In Thousands		
Pounds	14,022	13,409	1,099
Value	$4,605	$2,287	$224
Processed —			
Pounds	4,029	10,536	305
Value	$640	$1,382	$39
Shelled —			
Pounds	9,993	2,877	795
Value	$3,965	$905	$185

*The figures for 1931 represent production; those for 1929 refer to sales (shipments or deliveries) by manufacturers.

No data showing separately the amounts and values of pecans and almonds processed and shelled were collected at the census for 1929.

Shortenings (Not Lard), Vegetable Cooking Oils and Salad Oils

Total Value	1931	1929	Per Cent Change
	In Thousands		
Made in all industries	$144,297	$204,424	—29.41
Made in shortenings industry	$110,287	$146,850	—24.22
Made in other industries*	$34,010	$57,574	—40.93
Shortenings (other than lard):			
Total pounds	[1]1,180,070	[1]1,256,837	— 6.11
Total value	$103,755	$147,651	—29.73
Made in shortenings industry —			
Pounds	821,766	832,354	— 1.27
Value	$72,881	$98,341	—25.89
From vegetable oils and fats solely —			
Package goods, 8 lb. and under —			
Pounds	218,768	212,629	+ 2.88
Value	$21,804	$27,700	—21.29
Other, over 8 lb.—			
Pounds	381,380	445,842	—14.46
Value	$32,066	$50,467	—36.48
From animal and vegetable oils and fats —			
Package goods, 8 lb. and under —			
Pounds	105,747	70,840	+49.27
Value	$9,598	$8,762	+ 9.54
Other, over 8 lb. —			
Pounds	115,870	103,043	+12.45
Value	$9,414	$11,412	—17.51
Made in the meat-packing industry—			
Pounds	348,574	405,150	—13.99
Value	$29,900	$46,938	—36.30
Made as in other industries*—			
Pounds	9,730	19,332	—49.66
Value	$973	$2,373	—59.0
Cooking oils, salad oils, and other refined oils:			
Total pounds	595,937	555,052	+ 7.33
Total value	$40,542	$56,773	—28.59
Vegetable cooking oils:			
Pounds	97,722	(2)	.....
Value	$6,778	(2)	.....
Made in shortening industry —			
Pounds	72,975	(2)	.....
Value	$4,974	(2)	.....
Made in other industries —			
Pounds	24,747	(2)	.....
Value	$1,805	(2)	.....
Salad oils:			
Pounds	233,211	(2)	.....
Value	$17,534	(2)	.....
Made in shortening industry —			
Pounds	217,947	(2)	.....
Value	$16,202	(2)	.....
Made in other industries —			
Pounds	15,264	(2)	.....
Value	$1,332	(2)	.....
Other refined oils made in shortenings industry:[3]			
Pounds	265,005	(2)	.....
Value	$16,230	(2)	.....

*As secondary products.

[1]The slight differences between these totals and the corresponding ones given in the census report entitled "Animal and Vegetable Fats and Oils," are due to this report being based in part on returns for manufacturers' fiscal years, whereas the report entitled "Animal and Vegetable Fats and Oils" was based solely on returns for calendar years.

[2]Not reported in detail.

Biscuits and Crackers*

	1931	1929	Per Cent Change
	In Thousands		
Total Value	$211,609	$274,490	—22.9
Biscuits and Crackers			
Pounds	1,125,449	1,322,682	—14.9
Value	$198,426	$259,198	—23.4
Pretzels			
Pounds	45,840	43,865	+ 4.5
Value	$6,253	$7,006	—10.7
Other bakery products	$6,232	$7,246	—14.0
Miscellaneous products	$698	$1,040	—32.9

Chocolate and Cocoa Products*

Total Value	1931	1929	Per Cent Change
	In Thousands		
Made in all industries	(1)	$119,359	.....
Made in the chocolate and cocoa industry	$85,381	$118,212	—27.8
Made as secondary products in other industries	(1)	$1,147	.....
Chocolate (except coatings):			
Total pounds	143,143	152,984	— 6.4
Total value	$34,897	$48,204	—27.6
Unsweetened, cakes of not over 1 lb.			
Pounds	10,755	10,773	— 0.2
Value	$2,246	$3,699	—39.3
Sweet—Plain			
Pounds	17,863	17,880	— 0.1
Value	$4,070	$5,018	—18.9
With nuts—			
Pounds	9,235	4,936	+87.1
Value	$2,220	$1,424	+55.9
Milk—Plain:			
Pounds	64,151	63,663	+ 0.8
Value	$14,596	$18,928	—22.9
With nuts—			
Pounds	41,139	51,765	—20.5
Value	$11,765	$18,121	—35.1
Not separately reported as to kind (sweet or milk, plain or with nuts)—			
Pounds	.....	3,967	.....
Value	.....	$1,014	.....
Chocolate Coatings:[2]			
Total pounds	245,587	266,855	— 8.0
Total value	$33,671	$48,945	—31.2
Sweet—			
Pounds	119,475	148,196	—19.4
Value	$15,311	$25,055	—38.9
Milk—			
Pounds	94,664	93,538	+ 1.2
Value	$14,013	$19,253	—27.2
Liquor—			
Pounds	31,448	25,122	+25.2
Value	$4,347	$4,638	— 6.3
Cocoa, powdered:			
Total pounds	106,661	105,694	+ 0.9
Total value	$11,363	$15,054	—24.5
Unsweetened—			
Total pounds	95,185	93,916	+ 1.4
Total va ue	$9,115	$12,696	—28.2
In cans of not over 1 lb.—			
Pounds	27,483	31,715	—13.3
Value	$4,896	$7,023	—30.3
In cans of over 1 lb.—			
Pounds	10,854	7,035	+54.3
Value	$869	$878	— 1.0
In barrels or drums—			
Pounds	56,848	55,166	+ 3.0
Value	$3,351	$4,794	—30.1
Sweetened or mixed with other substances:			
Total pounds	11,476	11,778	— 2.6
Total value	$2,248	$2,358	— 4.7
In cans of not over 1 lb.—			
Pounds	3,732	4,053	— 7.9
Value	$1,036	$1,199	—13.7
In cans of over 1 lb.—			
Pounds	1,454	1,877	—22.5
Value	$367	$509	—27.8
In barrels or drums—			
Pounds	6,290	5,848	+ 7.5
Value	$845	$650	+30.0
Cocoa butter:			
Pounds	23,253	19,184	+21.2
Value	$3,571	$5,429	—34.2
Chocolate syrups:			
Gallons	1,046	855	+22.2
Value	$925	$985	— 6.1
Other chocolate and cocoa products	$954	$744	+28.3

*The figures for 1931 represent production; those for 1929 refer to sales (shipments or deliveries) by manufacturers.

[1] Not yet available.

[2] Includes coatings made and consumed in the manufacture of confectionery by establishments engaged in the production of both chocolate and confectionery. The confectionery departments of such establishments are classified in the confectionery industry.

Milk and Milk Products

MILK production in 1933 is, of course, the key to the prospects not only for the dairy industry but also for butter, cheese, condensed and evaporated milk, ice cream and the raw-material supply for many industrial fluid-milk users. Precise evaluation of the factors which are going to affect milk production is, of course, impossible. Neglecting for the moment political considerations, we find these major factors demanding attention:

1. The number of dairy cows in the United States the first of this year is apparently greater than a year ago, but the increase over the preceding year is a trifle smaller than for the two past years. The increase is sufficient, combined with the prospective first freshening of heifers this spring, to promise heavy additions to total dairy herds.

2. Production of milk per dairy cow has been decreased slightly (principally by restricted feeding) in many parts of the country by the tendency of farmers to produce less milk because of its low unit price.

3. Production of milk per dairy cow may be increased if pasture conditions in 1933 prove as much better than during the last three seasons as may be expected solely on the score of the law of averages. If, as some forecast, this is to be a wetter and cooler year, pasture conditions will be far superior to the average of the past three years, which was approximately 63 per cent of "normal." This compares with the past ten-year average of approximately 81 per cent of "normal."

4. Feed grains are abundant and cheap and will permit profitable milk production at milk prices that would normally be ruinous to the dairyman. This influence will certainly continue until after the good pasture season is reached.

5. Feed supplies and prices tor the autumn and winter of 1933 will, of course, depend on crop results of this year, though the carryover of corn from last year's extremely large crop would tend to offset any influence from a slightly subnormal corn crop. A wet cool year—if such is experienced—probably would not be detrimental to the production of any feed grain except corn. Any weather disadvantage in producing feed corn, such as that incident to a late wet spring or a very cool summer with poor maturity, might be more than offset in feed supplies for dairy cattle by the resulting super-average pasture conditions and the possibility of large production of silage from immature corn. Weather conditions alone, unless extremely unusual, probably could not result in any sharp curtailment of milk supply, because of the large dairy-cow population and large feed-grain carryover into 1933.

6. Culling of dairy herds to eliminate inefficient cows has been long neglected. The result is the prospect of a larger number of calves, corresponding to large cow population, but a lower average yield of milk per cow.

7. Only a sharp upturn in the price of cattle for slaughter can remedy the overdelayed culling of herds. This, as explained in the livestock page, is unlikely. Apparent beef consumption per capita has declined and total cattle population is so high as to make extremely unlikely any prospect of much more attractive market prices for such cull cows.

8. The apparent decline in beef consumption per capita (see page 48) is in part offset by local retail slaughter and home slaughter of both calves and cows. This is but a part of the general trend from national large-scale manufacture backward toward the basis of barter and small units of industry that is an outstandiing effect of the present depression.

9. A limited factor in decreasing milk supply is the tendency to allow the inefficient cow to go dry and to range without milk production or breeding. The very low price of feed and abundance of pasture, if it occurs as forecast above, will perhaps offset this tendency.

10. Such rise in prices of milk, butter, and other milk products as may be anticipated in 1933 will probably be merely an accompaniment of slow business recovery, these prices conforming in their change to the general upward trend of commodity prices which is hoped for, and yet none too confidently expected.

11. If an improvement in business should be accelerated beyond present expectations, it might result in a sharp reversal in the dairy price trend, since in 1933 we are close to the peak of the normal cow cycle. However, if recovery is not accelerated and general commodity prices do not rise materially, the peak in the cow cycle probably will not be reached for several months.

Milk and Butter Fat Used in Factories[1] and by Non-Farm Population[2]

	1929				1930				1931			
Factory product[4]	Product Manufactured 1,000 Lb.	Whole Milk Used[3] 1,000 Lb.	Fat in Milk Used[3] Per Cent	Fat in Milk Used[3] 1,000 Lb.	Product Manufactured 1,000 Lb.	Whole Milk Used[3] 1,000 Lb.	Fat in Milk Used[3] Per Cent	Fat in Milk Used[3] 1,000 Lb.	Product Manufactured 1,000 Lb.	Whole Milk Used[3] 1,000 Lb.	Fat in Milk Used[3] Per Cent	Fat in Milk Used[3] 1,000 Lb.
Butter (creamery and whey)	1,598,248	32,517,470	3.97	1,292,115	1,597,747	32,339,736	3.97	1,284,147	1,667,452	33,905,762	3.98	1,347,907
Cheese, American (whole and part skim)	375,265	3,832,549	3.57	136,972	382,469	3,903,900	3.58	139,601	377,756	3,851,425	3.58	137,881
Cheese (other than American and cottage, pot and bakers')	107,594	1,061,361	3.38	35,926	117,229	1,157,259	3.38	39,143	114,207	1,121,384	3.40	38,134
Evaporated milk (whole)	1,651,306	3,594,682	3.66	131,745	1,577,352	3,424,265	3.67	125,666	1,539,031	3,340,223	3.67	122,453
Condensed milk (whole)	197,611	433,652	3.68	15,949	184,047	402,895	3.68	14,823	143,356	312,659	3.69	11,552
Ice cream (factory)	1,200,762	3,806,406	3.89	147,955	1,135,502	3,592,377	3.88	139,492	982,953	3,121,020	3.87	121,158
Powdered cream	294	5,863	3.82	224	400	7,948	3.83	304	161	2,810	4.35	122
Powdered milk (whole)	13,202	101,068	3.79	3,831	15,440	117,735	3.80	4,481	12,628	95,842	3.82	3,665
Malted milk	22,850	61,107	3.80	2,327	22,691	60,480	3.82	2,313	19,198	51,292	3.80	1,956
Total used for factory products.	.....	45,414,158	....	1,767,044	.....	45,006,595	....	1,749,970	.....	45,802,417	....	1,784,828
Butter fat from whey cream	.....	341,857	....	13,569	.....	354,042	....	14,059	.....	348,075	....	13,836
Butter fat from butter, etc., used in ice cream	.....	761,231	....	29,596	.....	721,120	....	27,987	.....	647,967	....	25,144
Net used for factory products.	.....	44,311,070	3.89	1,723,879	.....	43,931,433	3.89	1,707,924	.....	44,806,375	3.90	1,745,848
Milk used by non-farm population[5]	.....	32,128,043	3.83	1,232,024	.....	32,513,042	3.83	1,247,067	.....	32,167,848	3.83	1,233,030

[1]Factories reporting manufactured dairy products.
[2]As fluid milk and cream.
[3]Based on the quantities of milk and cream reported as being received for use in these products. In addition some fat remains in skim milk on farms, some is lost in spillage, stickage, etc., before being delivered, and some is excluded through rounding of fractional weights and tests upon delivery.
[4]These data differ from similar data previously issued in several respects. The milk required per pound of product is based on plant milk and cream receipts. Allowance has been made for duplication, principally in fat recovered from whey and in the use of such manufactured products as butter and evaporated or condensed milk in ice cream. It has been assumed that milk and cream used in ice cream made in homes and in small establishments not reporting as factories is included as consumption as fluid milk or cream.
[5]Based on reports from city boards of health. The quantities shown exclude consumption by the urban farm population. Non-farm population estimated as 91,246,020 in 1929; 92,745,842 in 1930; and 93,089,876 in 1931.

Artificial Factors

EVEN MORE difficult to forecast than meteorological factors affecting milk and its products is the result of the present legislative effort of Congress. That effort is undertaking to secure farm relief by some form of adjustment in agricultural raw-material prices. In its first draft the domestic allotment plan as conceived by the House of Representatives contemplated such "favor" for only wheat, cotton, hogs and tobacco; but in the form in which it was finally passed through the House and sent to the Senate on Jan. 13, it included also butter fat and two relatively minor crops: rice and peanuts. If such a bonus or bounty system can be established for butter-fat producers, then certainly all of the elements affecting price, and perhaps even elements affecting total supply, must be revised by corrections which in percentage may be more important than all the other factors taken together.

It is utterly impossible to forecast what legislative enactment may ultimately be accomplished, if any. But in mid-January, when this is written, it appears that the present lame-duck session of Congress is not likely to succeed in drafting any farm relief bill which will secure Presidential approval or command sufficient support in both houses to pass over the President's veto. Hence, this legislative factor is essentially one of disturbance of the market, unsettling the plans of producers, traders and users. It is unlikely that these legislative influences within the United States can become real in their corrective effect on the relatively low farm prices of milk or milk products until after the middle of 1933, if even then they become effective.

Dairy Production, by Kind, Quantity and Value—1929, 1931*

(All items in thousands; 000 omitted)

BUTTER

	1931	1929	Per Cent Change
Total pounds	1,648,911	[1]1,618,092	+ 1.9
Total value	$439,282	[1]$706,842	—37.9
Made in the butter industry:			
Pounds	1,603,038	[1]1,583,995	+ 1.2
Value	$426,728	[1]$692,245	—38.4
Made as a secondary product in other industries:			
Pounds	45,874	34,097	+34.5
Value	$12,555	$14,596	—14.0
Creamery butter:			
Pounds	1,647,749	1,615,688	+ 2.0
Value	$438,973	$705,980	—37.8
Whey butter (made from whey cream):			
Pounds	1,163	1,656	—29.8
Value	$310	$469	—33.9

[1]Includes 747,327 pounds, valued at $393,189, reported as "butter oil." No such production was reported for 1931.

ICE CREAM, ICES AND SPECIALTIES

	1931	1929	Per Cent Change
Ice cream, ices and specialties, made in all industries:			
Total gallons	230,177	279,777	—17.7
Total value	$269,331	$332,080	—18.9
Made in the "ice cream" industry, value	$252,489	$305,739	—17.4
Made as secondary products in other industries, value	$16,861	$26,341	—36.0
Ice cream and ices:			
Gallons	220,298	272,438	—19.1
Value	$255,270	$320,888	—20.4
Specialties (cups, sticks, etc., reported in ice-cream equivalent)			
Gallons	9,880	7,339	+34.6
Value	$14,081	$11,192	+25.8

CHEESE

	1931	1929	Per Cent Change
Cheese, including cottage, pot and bakers':			
Aggregate pounds	567,977	588,026	— 3.4
Aggregate value	$70,172	$112,723	—37.7
Made in the cheese industry:			
Pounds	470,027	514,132	— 8.6
Value	$62,052	$103,183	—39.9
Made as a secondary product in other industries:			
Pounds	97,950	73,894	+32.6
Value	$8,120	$9,540	—14.9
Cheese, other than cottage, pot and bakers':			
Total pounds	467,181	487,200	— 4.1
Total value	$62,861	$103,292	—39.1
American or cheddar (whole-milk, part skim and skim):			
Pounds	338,428	375,371	— 9.8
Value	$44,155	$76,904	—42.6
Swiss (including block):			
Pounds	23,843		
Value	$3,660		
Brick and Munster:			
Pounds	31,119	58,134	+ 7.9
Value	$3,921	$12,076	—28.4
Limburger:			
Pounds	7,791		
Value	$1,068		
Cream and Neufchatel:			
Pounds	54,147	42,003	+28.9
Value	$7,529	$11,123	—32.3
All Italian varieties:			
Pounds	8,384	8,579	— 2.3
Value	$1,589	$1,964	—19.1
All other varieties:			
Pounds	3,470	3,113	+11.5
Value	$939	$1,224	—23.3
Cheese — Cottage, pot and bakers':			
Pounds	100,795	100,826	(1)
Value	$7,311	$9,432	—22.5

(1) Less than one-tenth of one per cent decrease.

CONDENSED AND EVAPORATED MILK AND RELATED PRODUCTS

	1931	1929	Per Cent Change
Condensed and evaporated milk and related products, aggregate value	$415,546	$219,984	—33.8
Made in the condensed and evaporated milk industry, value	$134,081	$198,912	—32.6
Made as secondary products in other industries, value	$11,465	$21,072	—45.6
Condensed and evaporated milk and buttermilk:			
Total pounds	2,071,172	2,310,727	— 10.4
Total value	$115,058	$173,316	—33.6
Condensed milk:			
Total pounds	391,696	532,727	— 26.5
Total value	$23,569	$42,917	—45.1
Case goods:			
Total pounds	175,334	246,344	— 28.8
Total value	$13,105	$24,435	— 46.4
Made from whole milk:			
Pounds	145,935	(1)	.....
Value	$11,350	(1)	.....
Made from skim milk:			
Pounds	29,400	(1)	.....
Value	$1,755	(1)	.....
Bulk goods:			
Total pounds	216,361	286,383	— 24.5
Total value	$10,464	$18,482	— 43.4
Made from whole milk:			
Pounds	99,635	(1)	.....
Value	$6,077	(1)	.....
Made from skim milk:			
Pounds	116,726	(1)	.....
Value	$4,387	(1)	.....
Evaporated milk:			
Total pounds	1,580,029	1,642,214	— 3.8
Total value	$89,606	$126,202	—29.0
Case goods:			
Total pounds	1,423,697	1,366,764	+ 4.2
Total value	$83,556	$110,822	—24.6
Made from whole milk:			
Pounds	1,420,368	(1)	.....
Value	$83,402	(1)	.....
Made from skim milk:			
Pounds	3,329	(1)	.....
Value	$154	(1)	.....
Bulk goods:			
Total pounds	156,332	275,449	—43.2
Total value	$6,050	$15,380	—60.7
Made from whole milk:			
Pounds	70,578	(1)	.....
Value	$3,799	(1)	.....
Made from skim milk:			
Pounds	$85,754	(1)	.....
Value	$2,251	(1)	.....
Condensed and evaporated buttermilk:			
Pounds	99,448	135,787	—26.8
Value	$1,883	$4,197	—55.1
Dried and powdered cream:			
Pounds	681		
Value	$168		
Dried and powdered skim milk:			
Pounds	284,100	220,714	+39.5
Value	$10,953	$20,173	—28.4
Dried and powdered whole milk:			
Pounds	23,046		
Value	$3,321		
Dried and powdered buttermilk:			
Pounds	60,403	67,877	—11.0
Value	$2,041	$4,307	—52.6
Sterilized milk (canned):			
Pounds	927	6,711	—86.2
Value	$13	$498	—97.4
Sugar of milk (crude):			
Pounds	3,746		
Value	$229		
Sugar of milk (refined):		7,102	+ 5.9
Pounds	3,774	$686	+ 3.0
Value	$477		
Ice-cream mix:			
Pounds	133,626	137,203	— 2.6
Value	$11,048	$15,278	—27.7
Dried casein:			
Pounds	40,805	57,826	—29.4
Value	$2,237	$5,726	—60.9

(1) Not called for on schedule.

*The figures for 1931 represent production; those for 1929 refer to sales (shipments or deliveries) by manufacturers.

Estimated Production—1932

(Millions of pounds; 000,000 omitted)

Commodity	Jan. to Nov. (Inc.) 1932*	1931	Per Cent Change
Creamery butter	1,536	1,544	— 0.53
Farm butter	515	525	— 1.8
Total butter	2,052	2,069	— 0.8
Cheese	438	465	— 6.9
Condensed milk	205	266	—23.0
Evaporated milk	1,414	1,340	+ 5.5
Total milk equivalent	51,461	52,116	— 1.3

Apparent Trade Output

(Including production, changes in stocks and net imports and exports)

(Millions of pounds; 000,000 omitted)

	1932*	1931	Per Cent Change
Butter	2,041	2,090	— 2.4
Cheese	487	519	— 6.2
Condensed milk	193	262	—26.4
Evaporated milk[1]	1,370	1,352	+ 1.4
Total milk equivalent	51,629	53,121	— 2.8

*Figures subject to revision.

[1]Case goods only.

U. S. Cold Storage Holdings

(Thousands; 000 omitted)

Commodity	Jan. 1, 5-Yr. Avg.	Jan. 1, 1932	Jan. 1, 1933*
40 per cent cream (40 qt. cans)	.....	60	168
20 per cent cream (40 qt. cans)	.....	.....	.....
Butter, creamery (lb.)	52,410	26,643	22,044
Cheese, American (lb.)	63,685	60,804	57,750
Cheese, Swiss (lb.)	8,487	9,747	4,239
Cheese, brick & Munster (lb.)	1,431	1,365	746
Cheese, limburger (lb.)	1,249	1,071	973
Cheese, all other (lb.)	5,688	5,331	5,016

*Figures subject to revision.

Note:—These holdings include stocks in both cold storage warehouses and meat-packing plants.

Other Stocks

(Thousands; 000 omitted)

Commodity	Dec. 1, 1932*	Dec. 1, 1931
Condensed milk in manufacturers' hands (lb.)	22,138	23,738
Evaporated milk in manufacturers' hands (lb.)	139,685	139,844
Dry milk (skim) (lb.)	15,194	20,829
10-per cent cream (40 qt. cans)	205	91

*Figures subject to revision.

Eggs and Poultry

Kind, Quantity, and Value

[The figures for 1931 represent production; those for 1929 refer to sales (shipments or deliveries) by manufacturers]

POULTRY KILLED, DRESSED AND PACKED

Total Value	1931	1929	Per Cent Change
	—In Thousands—		
In all industries	$95,949	$128,005	—25.0
In poultry industry	$94,975	$126,948	—25.2
In other industries*	$972	$1,058	— 8.1
Poultry killed and dressed: Total value	$92,068	$122,466	—24.8
Chickens: Pounds	340,118	329,689	+ 3.2
Chickens: Value	$75,183	$94,325	—20.3
Turkeys: Pounds	34,720	31,427	+10.5
Turkeys: Value	$8,785	$9,909	—11.3
Ducks: Pounds	5,573	5,660	— 1.5
Ducks: Value	$1,087	$1,386	—21.6
Geese[1]: Pounds	4,130		
Geese[1]: Value	$777	$16,847	—33.9
Other poultry and poultry not reported as to kind, value	$6,237		
Poultry canned, including potted chicken, value	$2,719	$4,125	—34.1
Chicken broth and soup, value[1]	$1,021		
Other poultry products, and dressed rabbits, hares, value	$140	$1,414	—17.8

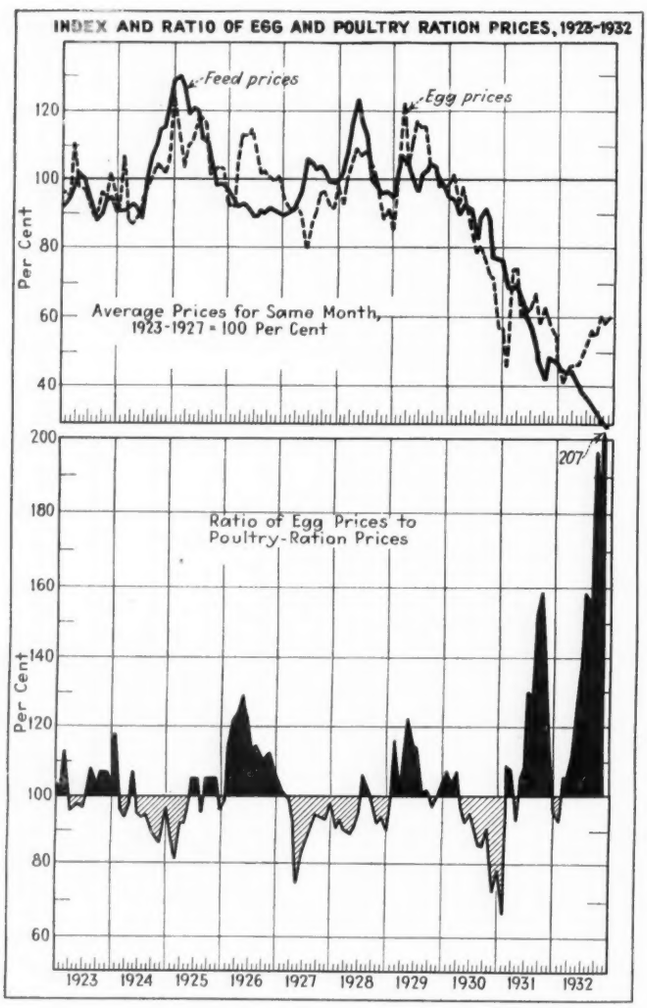
[1] Data not called for separately on schedule for 1929.

* As secondary products.

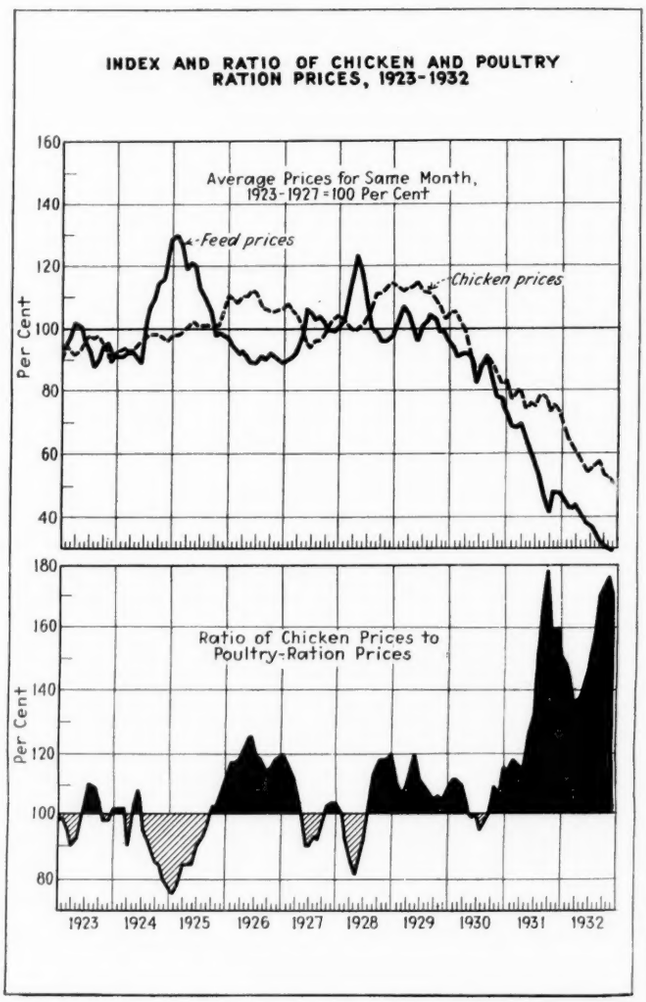
EGGS serve as an important raw material for food manufacture, although household, hotel, restaurant and other institutional use probably accounts for nearly 90 per cent of the net consumption. The usage in bakeries of eggs and egg products is from 30 to 40 million dollars per year; in noodle manufacture, from 1½ to 2 million; for ice cream, about ¾ million; and in mayonnaise manufacture, the equivalent of 7½ million dozen eggs. Fresh, dried or frozen eggs are also of large importance in candy making, baking powder manufacture, the preparation of ready-mixed or prepared flour, and to a considerable extent in numerous other industries.

The contribution of poultry and eggs to the gross income of the farm is extremely large, representing possibly 20 per cent of the total from all animals and animal products. In many years this gross income from chickens and chicken eggs is greater than the income received from cattle and calves, being exceeded in the national farm receipts only by milk and hogs; and the recent decline in hog prices may place poultry and egg returns second.

Egg production and marketing is, of course, undoubtedly interwoven with the poultry business; and both poultry and egg markets to a considerable degree depend on feed supplies and prices. The charts below show the relationship between poultry and egg prices and the corresponding prices of poultry rations. The larger areas and wider swings away from normal in the case of poultry than in the case of eggs, of course, reflect the somewhat slower reaction of chicken population than egg supply to price factors. But both poultry and egg supplies react much more quickly than do other animal products, even milk.

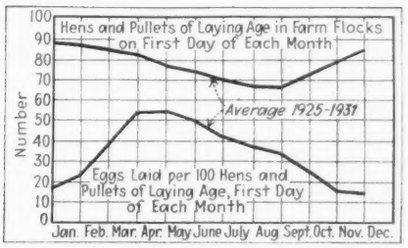

INDEX AND RATIO OF EGG AND POULTRY RATION PRICES, 1923-1932
Feed prices
Egg prices
Per Cent
Average Prices for Same Month, 1923-1927 = 100 Per Cent
207
Ratio of Egg Prices to Poultry-Ration Prices
1923 1924 1925 1926 1927 1928 1929 1930 1931 1932

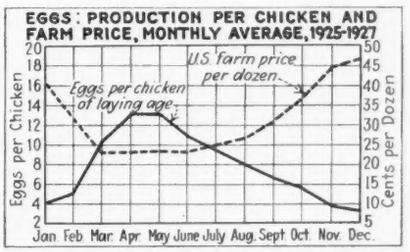
Dark areas above the 100 per cent line in lower chart indicate periods when egg prices were relatively higher than feed prices.

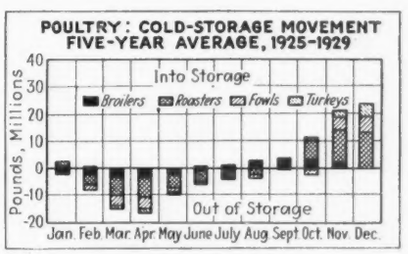

INDEX AND RATIO OF CHICKEN AND POULTRY RATION PRICES, 1923-1932
Average Prices for Same Month, 1923-1927 = 100 Per Cent
Feed prices
Chicken prices
Per Cent
Ratio of Chicken Prices to Poultry-Ration Prices
1923 1924 1925 1926 1927 1928 1929 1930 1931 1932

Chicken prices have been relatively higher than feed prices since the summer of 1928, indicating a condition favorable to chicken raising.

Some Trend Possibilities In Poultry and Eggs


Hens and Pullets of Laying Age in Farm Flocks on First Day of Each Month
Average 1925-1931
Eggs Laid per 100 Hens and Pullets of Laying Age, First Day of Each Month
Number
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.


EGGS: PRODUCTION PER CHICKEN AND FARM PRICE, MONTHLY AVERAGE, 1925-1927
U.S. farm price per dozen
Eggs per chicken of laying age
Eggs per Chicken
Cents per Dozen
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.


POULTRY: COLD-STORAGE MOVEMENT FIVE-YEAR AVERAGE, 1925-1929
Into Storage
Broilers Roasters Fowls Turkeys
Out of Storage
Pounds, Millions
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

SEASONAL factors dominate both the poultry and egg business. Yet there is superimposed on the seasonal factor the effect which results from the composite decision of farmers to hatch more chicks, to cull flocks more vigorously, or to feed more generously for greater egg production. Such decisions can within a period of a few weeks radically shift the whole market situation with reference to both poultry supply and price.

These decisions are influenced greatly by the market price of eggs, which in turn is affected by weather conditions and consumer demand. For these reasons forecasts pertaining to either poultry or egg markets beyond a very short period are extremely difficult and are filled with possibilities for error.

As late as less than a month ago indications were that attractive market prices for poultry and fresh eggs would continue into the spring of 1933.

Throughout 1932, poultry and, to a lesser degree, eggs had a wide price advantage above the normal relation of their price to the price of feed used in producing them. Even though this relationship in price resulted in a marked increase in eggs produced in the latter part of the year, the market price continued on an index number basis far above normal as compared with other farm commodities. In December, apparently because of the relatively low cold-storage holdings of eggs and unexpected and severe cold weather, the farm price of eggs rose rapidly to 265 per cent of the June price. Usually the seasonal price increase results in slightly less than doubling the June minimum.

Had those conditions continued, high egg prices combined with an abundance of cheap feed would have tempted the chicken raisers of the United States to hatch an unusually large number of chicks and thus increase considerably the chicken population by June, 1933.

Such developments would have probably meant an abundant supply of both poultry and fresh eggs for the latter part of 1933. However, a sudden shift in weather conditions has changed a strong December market to a weak January market. An abundance of cheap feed plus unusually warm weather have promoted a marked increase in production. The same warm weather plus increased unemployment and lower incomes have depressed market demand. Such a turn of affairs has reversed, probably temporarily, the outlook for increased chicken population and thereby egg production.

On the other hand, should the weather suddenly turn cold the price of eggs will soar to higher levels because of retarded production and depleted cold-storage stocks and the December trend will again predominate.

These short-time influences should not as a rule be regarded too seriously in formulating long-time plans. However, in poultry and egg production they carry more significance than in most other industries. The accompanying charts of fundamental data, however, will afford a basis for future judgment in these matters as the supplementary data of the coming years gradually are made available.

Eggs in Cold Storage

	On Jan. 1 in thousands		
	5-year Av.	1932	1933*
Shell Eggs, Cases	1,274	1,475	159
Frozen Eggs—Case Equiv.	1,824	2,263	†1,581
Total—Case Equivalent	3,098	3,738	1,740

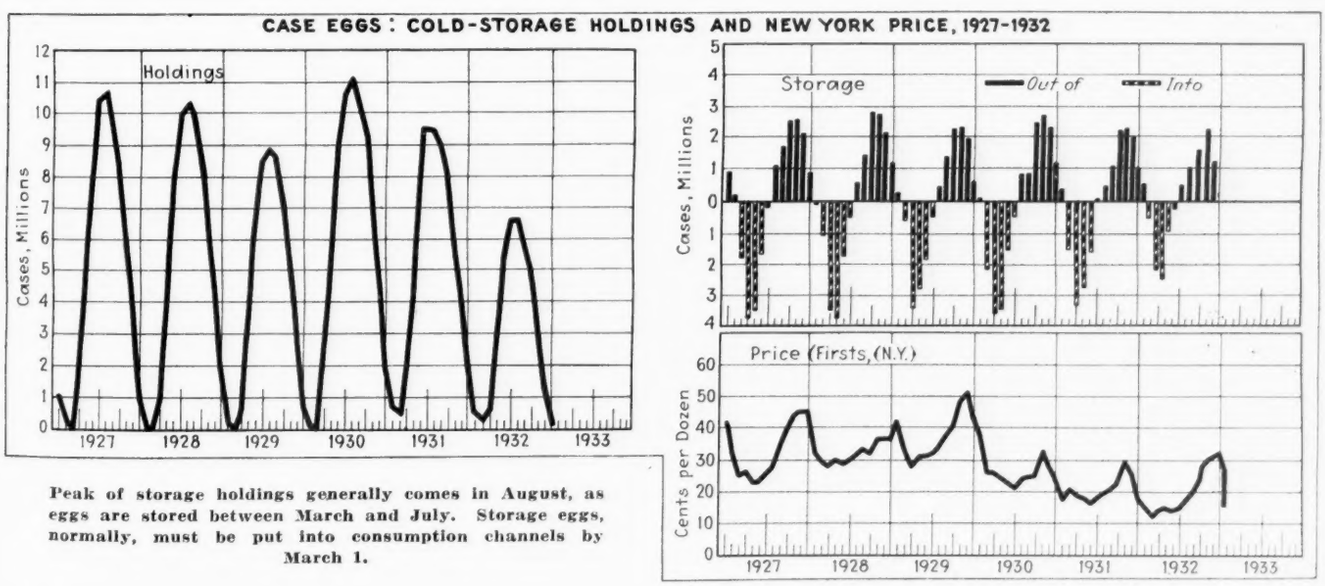
Frozen Poultry in Storage

Broilers, lb.	17,343	15,432	11,276
Fryers, lb.	9,902	9,213	14,095
Roasters, lb.	34,544	35,220	37,684
Fowls, lb.	16,713	13,256	13,130
Turkeys, lb.	8,905	10,320	14,566
Ducks, lb.			4,436
Miscellaneous, lb.	‡30,495	‡33,259	16,451

* Subject to revision.

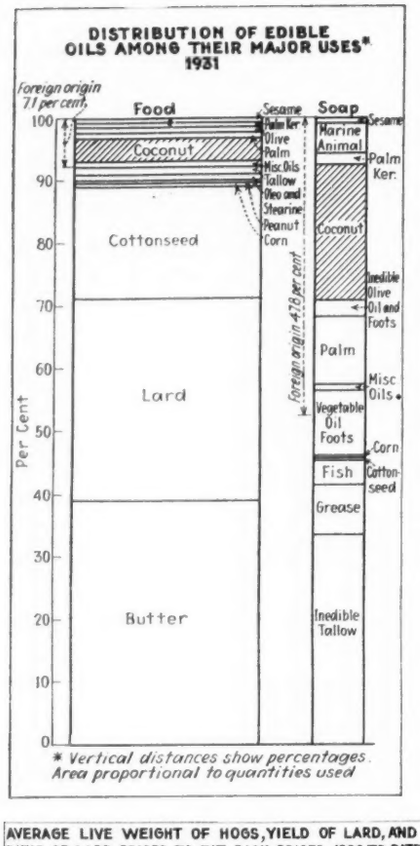
† 71 per cent reported as: whites, 32 per cent; yolks, 18 per cent; and mixed, 50 per cent.

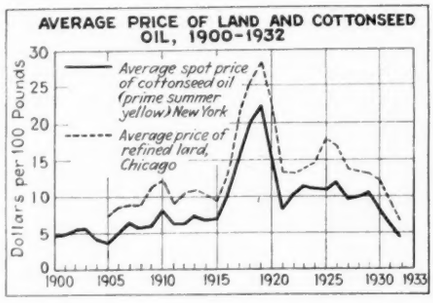
‡ Includes ducks.

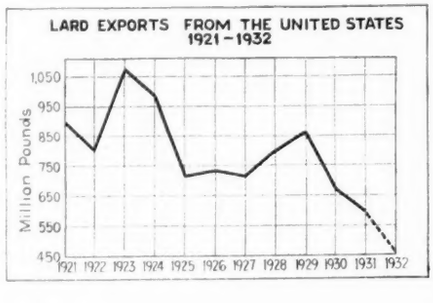


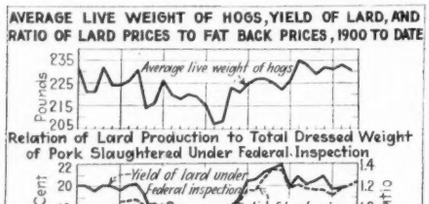
Peak of storage holdings generally comes in August, as eggs are stored between March and July. Storage eggs, normally, must be put into consumption channels by March 1.

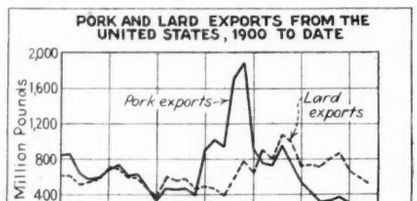
Fats and Oils




AVERAGE PRICE OF LAND AND COTTONSEED OIL, 1900-1932
Average spot price of cottonseed oil (prime summer yellow) New York
Average price of refined lard, Chicago
Dollars per 100 Pounds




AVERAGE LIVE WEIGHT OF HOGS, YIELD OF LARD, AND RATIO OF LARD PRICES TO FAT BACK PRICES, 1900 TO DATE
Average live weight of hogs
Pounds
Relation of Lard Production to Total Dressed Weight of Pork Slaughtered Under Federal Inspection
Yield of lard under Federal inspection
Ratio of lard prices to fat back prices
Per Cent
Ratio



FATS AND OILS for the food industries are to a large extent interchangeable, not only within the food group but also among the other industrial users. Furthermore, fats and oils, perhaps more than most raw materials, demand an international view. Also they are frequently merely byproducts of other agricultural activity, such as the growing of cotton and the packing of pork, and hence cannot be independently controlled by their producers.

Some fats and oils are made from one-year crops like corn and cottonseed, others come from sources like coconuts, the production of which depends upon long-time considerations rather than upon the current wish of the land owner. In some cases there are alternate outlets for feed or even for fertilizer usage; and then, though the oil material may be grown, the oil need not be separated to prevent complete wastage of the crop. And, of course, in the case of such oils as that made from corn, the use of the raw material for oil making is but a minor part of the total usage of the crop. All these considerations enter when one undertakes to study the supply or prospective market price of the food oils.

In a recent issue of FOOD INDUSTRIES (July, 1932, pp. 248-250) are given certain general statistical summaries as to the principal countries producing oil-bearing materials, available world supplies, and the major factors affecting the United States usage.

United States Factory Production of Animal and Vegetable Fats and Oils, Calendar Years

Fat or Oil	1928	1929	1930	1931	1932 First Quarter	1932 Second Quarter	1932 Third Quarter
	In Thousand Pounds						
Cottonseed, crude	1,460,469	1,581,631	1,616,102	1,417,000	519,709	224,152	249,476
Cottonseed, refined	1,330,764	1,450,772	1,457,564	1,295,000	453,495	273,087	173,569
Peanut, crude and virgin	12,439	16,131	25,495	14,000	3,415	2,990	1,843
Peanut, refined	9,546	10,680	18,946	10,658	2,375	2,379	1,903
Coconut or copra, crude	311,181	352,654	352,727	303,434	77,887	62,358	53,015
Coconut or copra, refined	295,909	334,567	300,405	272,471	57,361	54,351	57,350
Corn, crude	124,327	133,680	120,747	113,145	26,036	24,320	27,394
Corn, refined	104,487	121,451	101,148	104,014	28,741	19,488	26,192
Soybean, crude	4,716	11,009	14,387	39,129	14,629	9,257	5,405
Soybean, refined	7,441	7,831	6,629	23,890	2,689	2,036	4,835
Olive, edible	1,438	1,003	2,184	1,638	616	.....	.....
Palm kernel, crude	.....	.....	712	18,542	4,484	(d)	(d)
Palm kernel, refined	16,607	15,567	32,151	25,150	4,634	3,577	1,609
Rapeseed	.....	.....	.....	.....	.....	.....	.....
Palm	.....	.....	.....	.....	.....	.....	.....
Lard, neutral	52,991	43,508	26,957	22,965	5,241	4,746	3,269
Lard, other edible	1,799,976	1,813,354	1,575,548	1,658,445	483,437	403,944	342,244
Tallow, edible	41,047	43,727	41,676	70,000	14,574	12,651	13,128
Lard compounds and other lard substitutes	1,143,349	1,220,102	1,211,268	1,172,874	220,417	221,006	276,916
Oleo oil	124,105	122,527	116,430	94,372	21,060	17,471	17,788
Animal stearin, edible	61,262	59,753	55,815	46,614	9,907	7,014	8,583
Tallow oil	11,231	10,684	7,947	9,994	1,578	1,158	1,790
Lard oil	22,161	29,855	17,253	19,891	4,701	3,964	3,634
Oleomargarine (b)	333,122	349,124	277,773	(c)	.....	.....	.....

Compiled from reports of the Bureau of the Census.
(b) Annual report of the Commissioner of Internal Revenue, year beginning July 1.
(c) Not yet available. (d) Not given as separate commodity.
Above figures include all production other than that of lard, tallow, and grease in the households, on the farms, and by the small local butchers and meat markets.

Stocks of Animal and Vegetable Fats and Oils (a)

	On Dec. 31 1927	On Dec. 31 1929	On Dec. 31 1931	Sept. 30 1932
	In Thousand Pounds			
Cottonseed, crude	158,834	115,884	126,761	103,100
Cottonseed, refined	503,140	425,459	489,866	503,199
Peanut, crude and virgin	1,598	2,269	5,046	1,145
Peanut, refined	1,372	2,286	1,531	1,731
Coconut or copra, crude	98,358	174,706	188,352	145,339
Coconut or copra, refined	15,491	17,706	14,800	13,004
Corn, crude	14,060	11,543	10,386	8,289
Corn, refined	10,365	12,307	12,873	7,838
Soybean, crude	4,704	12,577	13,635	11,002
Soybean, refined	1,492	2,871	4,714	5,345
Olive, edible	4,806	6,114	4,216	5,333
Palm kernel, crude	12,177	13,572	8,441	7,335
Palm kernel, refined	2,130	1,196	1,663	1,115
Rapeseed	5,719	5,795	3,867	2,691
Palm	41,326	52,576	89,054	83,972
Lard, neutral	3,162	4,174	2,085	1,846
Lard, other edible	49,909	59,872	51,035	58,871
Tallow, edible	3,970	3,166	4,899	3,712
Lard compounds and other lard substitutes	26,770	31,669	24,757	24,480
Oleo oil	6,629	8,108	4,864	4,856
Animal stearin, edible	5,891	4,955	4,582	2,449
Tallow oil	1,867	1,865	2,856	1,563
Lard oil	5,070	5,092	3,989	3,788
Oleomargarine (b)	.....	.....	.....	.....

(a) Stocks in factories, warehouses, and hands of importers and exporters. Does not include those in hands of households, local retailers, wholesalers, or jobbers except such as may be held in public warehouses.

The Outlook for Fats and Oils

THREE major sources of edible fats and oils must be considered when appraising these commodities as raw materials for the food industries:

1. Butter, the major product produced from all surplus milk supplies, is likely to be in abundant supply at reasonable price during 1933 (see pages 52-53).

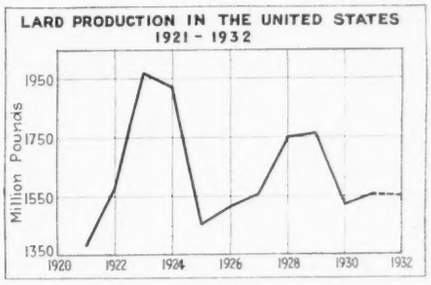
2. Lard, the food fat second in importance, is produced inevitably as one of the major coproducts in pork packing. During 1933, it probably will be produced in quantities slightly greater than during the past year, even though the total slaughter of pork, measured by the pounds of dressed meat, may not be any greater. It is already clearly shown by the experience of the past few months that hogs are being finished slightly heavier and that lard yields per 100 lb. of dressed meat are increasing sharply. It is probable that the lard production will be at least 5 per cent greater than last year.

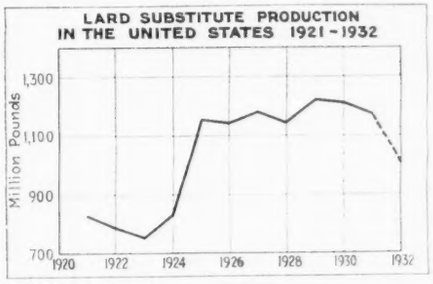
3. Vegetable oil for the food industry means primarily cottonseed oil. The United States cotton production, and hence cottonseed production, during 1932 was the lowest since 1923, dropping on an index-number basis from 134 in 1931 to 96 for 1932. However, it does not appear at all likely that this will result in any real shortage of seed for crushing nor justify any price increases, since the carryover from the exceptional crop of 1931 was very large. This fact affords small comfort to the vegetable-oil manufacturer, especially when he realizes that the price recently has been lower than for many years past.

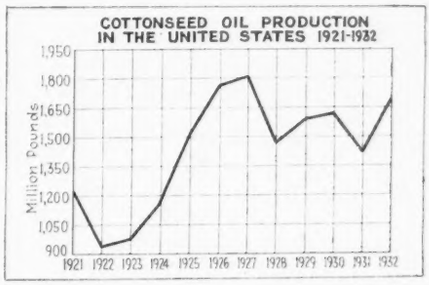
Minor oils in the food-plant supply follow closely the trends for the three major food fats.

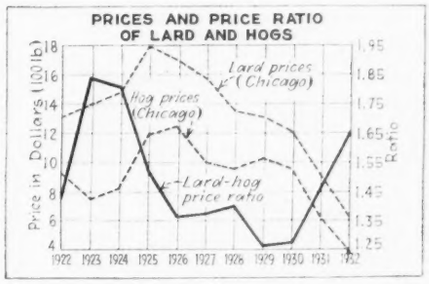
The largest single factor affecting food fat prices for 1933 is an artificial one; that is, the economic consequence of the legislative efforts, not only in the U. S. Congress but also throughout the rest of the world, attempting to secure for agriculture or for other divisions of home industry a bettered economic condition. Any such program of farm relief as the domestic allotment plan, if enacted, might completely upset the economic balance between one fat and another, between this nation and the others, or between agriculture, industry, and the ultimate consumer. A similar, though probably smaller, effect would come from a tariff on fats or perhaps even from provision for Philippine independence. No forecasting as to prices can give proper weight to these influences, since they are as yet embryonic in form. Furthermore, no estimates of supply, or prospective production in 1933 by agriculture, can ignore the psychological influence, first on the farmer and then on the trader and processer.

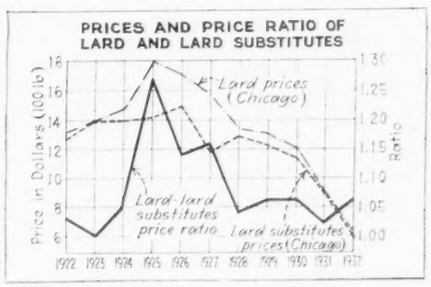
If one ignores all this "artificial" influence he can anticipate abundant supplies and prices which may move slowly upward only as they respond to change in the general commodity price level. If he undertakes to weight these legislative influences, he becomes lost in as dense a fog as appears to surround the efforts of Congress itself. Furthermore, to consider the influence of the U. S. Congress is not enough; there also are administrative embargoes, import quotas, export bonuses, and compulsory rules as to admixture, sale, or use, almost without number, now prevalent or in prospect in all of the major industrial nations. The forecaster certainly meets unusual difficulties this year.











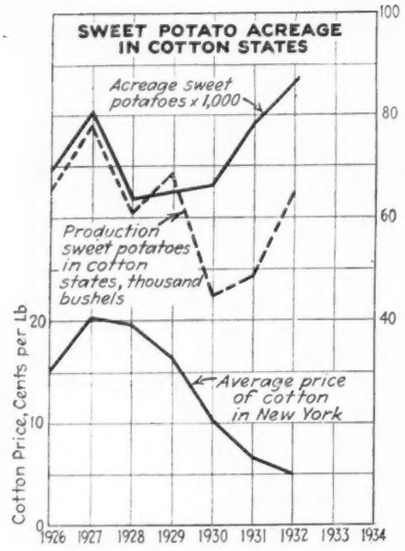
United States: Factory Consumption of Animal and Vegetable Fats and Oils, in Calendar Years, 1928-1931 and First Three Quarters in 1932

Fat or Oil	1928	1929	1930	1931	1932 First Quarter	1932 Second Quarter	1932 Third Quarter
	In Thousand Pounds						
Cottonseed, crude	1,444,197	1,578,130	1,602,064	1,403,000	495,795	302,429	189,729
Cottonseed, refined	1,181,907	1,244,936	1,241,983	1,033,000	220,753	223,273	283,700
Peanut, crude and virgin	12,360	13,828	24,044	12,188	3,061	3,213	2,208
Peanut, refined	8,949	8,703	17,561	12,145	1,235	1,847	1,712
Coconut or copra, crude	584,717	665,694	632,907	557,000	138,489	124,120	130,032
Coconut or copra, refined	267,111	321,489	329,637	310,000	64,327	59,171	62,380
Corn, crude	130,533	151,775	126,054	120,000	33,003	21,771	31,715
Corn, refined	18,057	26,431	20,821	28,000	10,737	3,999	4,334
Soybean, crude	15,457	20,793	17,599	35,501	6,203	5,460	8,102
Soybean, refined	3,997	4,941	8,930	16,302	2,767	2,842	3,600
Olive, edible	2,081	2,067	2,444	2,000	305	569	298
Palm kernel, crude	45,389	58,324	54,031	55,140	6,144	4,583	2,006
Palm kernel, refined	16,753	13,840	29,510	24,259	3,881	3,911	2,342
Rapeseed	15,169	13,327	11,532	8,783	1,615	1,841	1,405
Palm	178,937	198,017	219,993	236,000	45,363	46,482	55,733
Lard, neutral	25,659	28,480	16,848	12,121	3,777	4,406	5,083
Lard, other edible	18,094	17,389	19,497	10,000	1,039	1,136	1,695
Tallow, edible	30,091	28,452	31,256	71,433	10,528	12,453	14,251
Lard, compound and other lard substitutes	894	460	1,468	1,602	99	77	54
Oleo oil	46,465	56,360	46,493	33,000	5,968	3,499	3,875
Animal stearin, edible	51,258	52,245	46,129	31,000	6,536	7,464	5,031
Tallow oil	8,187	9,696	8,855	10,743	1,304	1,758	1,005
Lard oil	17,549	17,654	12,243	10,120	2,027	2,231	1,604

VEGETABLES AND

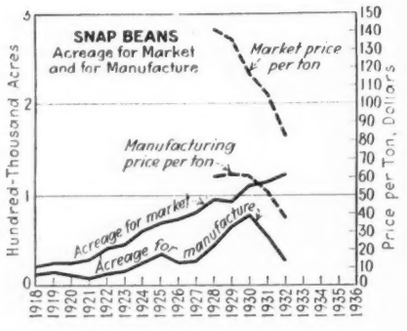
• The deadly competition between processed and unprocessed fruits and vegetables does not end its battle lines at the point of direct competition. It affects manufacturers of packaged foods in particular in widely separated localities.

• Essentially this battle for a place on the American menu

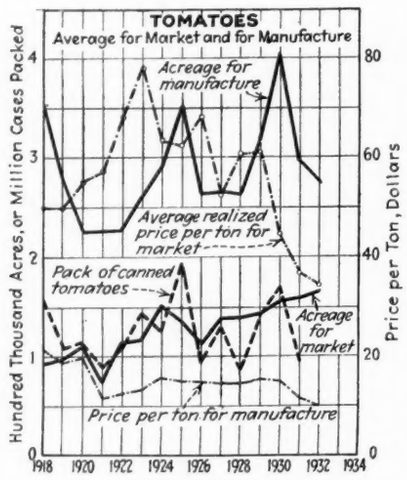


Sweet Potatoes—When cotton prices go below 8 cents per pound, the South cannot buy food, as is its custom, but must raise its own. The acreage planted, rather than the yield in tons, must be regarded as the true reaction of the farmer to low cotton prices. If the weather conditions of 1931, which yielded a huge cotton crop, should also have favored the growth of sweet potatoes and yams, their production would have been nearly doubled. If sweet-potato production is down, the fault is not the farmer's.

A reversal of weather conditions in 1933 probably will curtail cotton production, sending its price slightly higher, but it probably also will increase sweet-potato yields and supplant considerable of the food demand that would arise from improved cotton prices.



Snap Beans—The price per ton of snap beans for the fresh market has suffered grievously since 1928. Truckers have persisted in increasing acreage despite diminishing returns. The acreage for manufacture, largely in northern states, has suffered in the meantime, but the South has also received an economic rap on its knuckles for persistence in keeping up volume in the face of declining prices. Snap beans abandoned in 1932 because of poor market conditions amounted to 7,400 acres. Florida lost 284,000 bu. and Texas lost 278,000 bu. of beans that were unprofitable to ship. That sort of thing won't go on much longer.



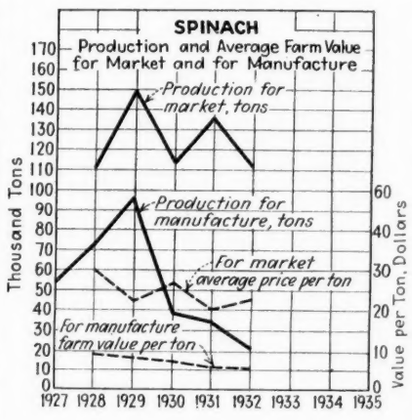
Tomatoes—Tomatoes are in a class by themselves in many respects. Consumption in their various forms has held up remarkably well. Fresh or market tomatoes are of two kinds: winter-grown, from the South, chiefly Florida and south Texas, which command a price that is often more than double the average price for all United States shown here; and summer-grown tomatoes, whose price often is comparable to the average price paid by manufacturers. The competition therefore is not between North and South by regions but between winter and summer producers.

Whether the acreage for market will continue to rise in 1933 will depend to a large extent on the general level of prices. If prices decline further, transportation costs will prevent winter tomatoes from reaching northern metropolitan markets in large quantity. It is believed, however, that further price declines are not to be anticipated, but if they should come at once, the season is now too far advanced to permit it to affect the acreage planted in Florida and Texas. The pattern is set for the 1933 winter-spring crop.

Production for the summer market will depend on almost identical factors that will affect production for manufacture: lateness of spring, weather, and changes in general price level before planting time in May and June. Acreage for manufacture is secured largely by future contract except in New Jersey, Maryland and Delaware ("Tri-State" territory) and presumably therefore will be sufficient to care for anticipated needs (compare also with tomato curves on p. 60).

IN AN economic period such as 1930 to 1933, due to unemployment and the back-to-the-land movement, there inevitably follows a rapid increase of vegetable production and also of those fruits where it is quickly possible to get in or out of production. Most fruits, however, grow on trees and bushes that require several years to come into bearing and hence are of less importance in a year-to-year forecast where the momentary intentions of man are the predominant variable.

Vegetable production is far more important than fruit as a flexible source of food, and for that reason the depression witnesses a rapid increase in number and size of home gardens, factory gardens, community gardens, truck gardens and truck farms. The latter two are purely commercial enterprises and only these enter the national statistics. The former are very important, however, for home canning of food depends on home production of raw material. About the only index of home canning which is available is the sale of rubber



Spinach—Production of spinach for manufacture has suffered severely during the past three years, although market spinach appears to be holding its own. As long as the farm value per ton of market spinach holds its present relative place and the weather permits its growing in the winter truck farming regions, the trend probably will continue until prices in general turn upward or transportation from California equals the market value.

FRESH FRUITS

is between winter and summer truck crops—between the North and the South. And the canner receives the first effect. But other food manufacturers are indirectly affected.

• Northern food manufacturers are vitally interested in a rise in price of cotton.

rings for glass jars, as reported on page 73, but this is admittedly very unreliable.

One feature, quite apparent from the data here presented, is the curious three-cornered competition between winter- and summer-grown fresh-vegetable producers and the vegetable canning industry. It is southern farmer versus northern farmer, with the canner on a hot spot.

The price position of cotton and its relation to vegetable production is better understood if one first reads "Opportunity or Calamity?" November, 1931, FOOD INDUSTRIES, pages 467-469. The sweet-potato curve on page 58 illustrates the typical reaction of the cotton farmer to low prices.

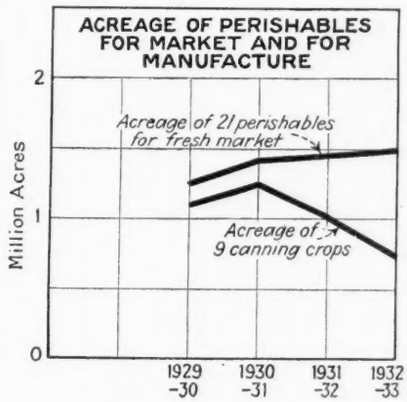
Indirectly all food manufacturers are affected by the competition from fresh produce, because it, being perishable, must be sold or spoil. Commission merchants, seldom risking their own funds, sell at any price. Staple items of a preserved or non-perishable nature are held—usually withheld—for better prices by their owners.

MANY food manufacturers must study the situations presented briefly in these pages if future operations are to be scheduled in the best possible manner. Changes in general price levels, which we do not attempt to forecast, will alter the expected production through a variety of ways. Therefore, it is important to interpret these pages in the light of changing international politics, financial policies and debt arrangements.

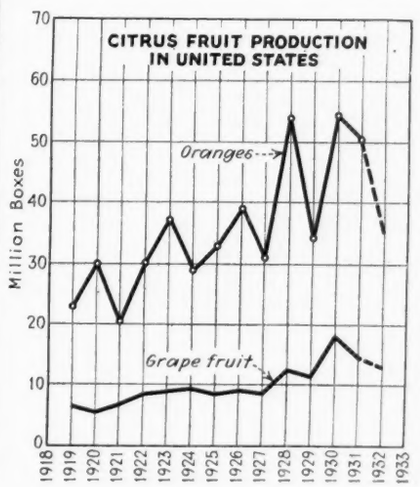
In applying the trend data presented here to a forecast pertaining to a given concern, the table of car requirements on page 43, compiled by American Railway Association, is an important supplementary forecast. And weather, either good, bad or indifferent, may change the whole situation.

Omission of discussions of potatoes, grapes, peaches has been necessary because of space limitations.

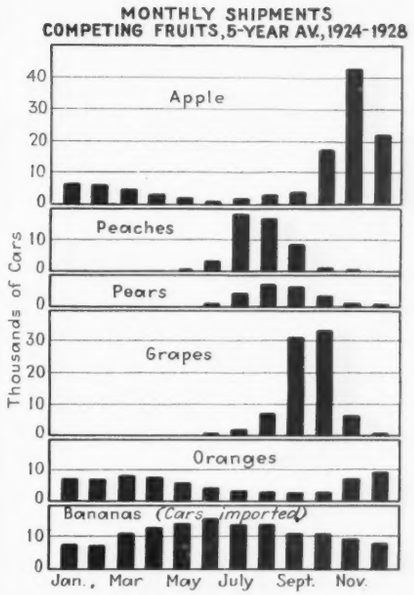
Sweet Corn—Canned sweet corn has little commercial competition from fresh sweet corn except in Metropolitan New York and Philadelphia. Wide swings in the annual acreage for manufacture suggests that corn canners need better interpretation of statistics.



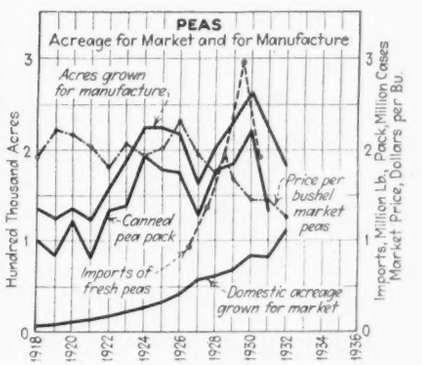
Fresh Produce vs. Canned Foods—Here is a curve that tells the story of the effect of unemployment on production of fruits and vegetables. Economic forces work in two ways: reduced buying power and increased effort to win a living from the land.



Citrus Fruits—Citrus production is still predominantly oranges. Largest increases occurring in Florida suggest a possible interrelationship with the Florida real estate boom that ended in 1926. Texas has recently had an orgy of planting citrus trees at the rate of about a million new trees a year, which do not produce until about five years of age or older. Texas has approximately only 20 per cent of its citrus trees now in bearing. Although a lesser factor in the market today, its production can be expected to quadruple by 1937, even if no more trees are planted.



Interfruit Competition—Five years' experience of fresh-fruit shipments by months shows when and where the intercommodity fruit competition lies. Apples, peaches, pears and grapes have constant competitors in canned fruits, dried fruits, oranges and bananas. Citrus trees are still increasing in number and total production, while apple trees decreased 46 per cent in number between 1910 and 1930, but productivity per tree has increased so much that total production is nearly constant.


PEAS
Acreage for Market and for Manufacture
Hundred Thousand Acres
Imports, Million Lb., Pack, Million Cases
Market Price, Dollars per Bu.
Acres grown for manufacture
Price per bushel market peas
Canned pea pack
Imports of fresh peas
Domestic acreage grown for market
1918 1920 1922 1924 1926 1928 1930 1932 1934 1936

Peas—Acreage of peas grown in the United States increased 200 per cent from 1918 to 1932. The high point of 250 per cent of 1918 acreage came in 1930. In that year the country also imported 3,000,000 lb. of peas. In 1918, only 7.4 per cent of the peas raised commercially went to market, but by 1932 the truck crop had crept up to 38 per cent of the total. Neither importations nor depressions seem to dampen the truck farmer's ardor, and acreage for manufacture seems to have been affected by both of them. Market peas come largely from the South in winter. Increasing development of its market volume against competition from canned peas suggests a need for either improved technology or an improved price relationship for the northern pea canner.

What Makes the Price of Canned Vegetables?

MOVEMENTS of canned-food prices received a high degree of elucidation by Carlos Campbell, of the Bureau of Agricultural Economics, in several addresses which he presented at the convention of the National Canners' Association in Chicago during the week of Jan. 23. Many have believed that the law of supply and demand fails to explain price movements in this field. His discussion, while not disparaging this basic relationship, shows that other factors, particularly intercommodity competition, must also be considered in a price forecast to be reasonably accurate.

The principal vegetables competing with canned corn were stated by Mr. Campbell to be canned peas and canned tomatoes. The supply of canned peas for 1932-33 is reported to be about 13,000,000 cases, which is below average, and the supply of canned tomatoes may be about 12,000,000 cases, which is larger than last year's supply but below the average of the last five years.

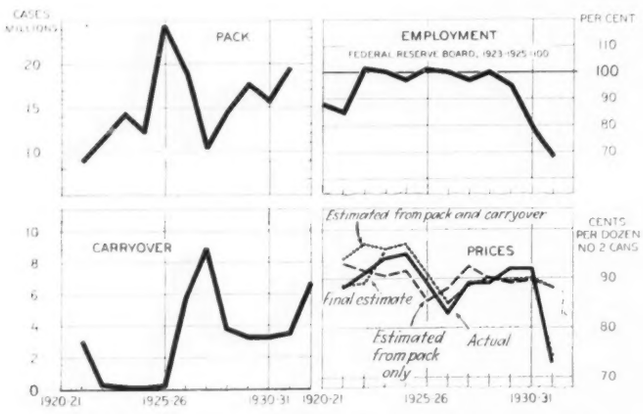
The demand for canned corn during recent years has been declining, despite the fact that during 1931-32 more canned corn moved into consuming channels than during the 1930-31 season. The increased disappearance in 1931-32 of about 4 to 5 per cent was accomplished by a reduction in prices of from 30 to 35 per cent.

A nominal carryover in most industries is not considered a factor depressing to prices. It is probable that the corn-canning industry may come to consider a regular carryover in canners' warehouses of about 2,000,000 cases as being normal and therefore as having little effect on prices early in the following season.

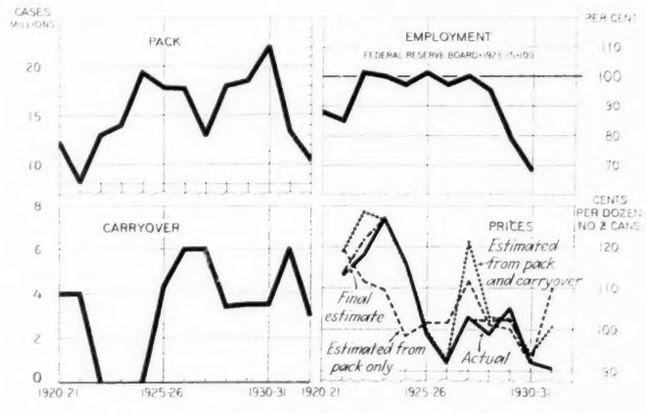
When the index of employment, as a measure of consumer buying power, is between 105 and 95, there is no appreciable effect on corn prices, but when the index falls below 95, the effect on prices of canned corn becomes much greater. The index is "lagged" one year because of the characteristic lag in the relationship between employment and consumer demand for foods. Following 1920-21, 1921-22, and 1930-31 the lower prices than size of supply would justify are explained by the unemployment then prevailing.

It appears that the other factors which enter into price movements, broadly speaking, are all components of the supply or demand forces, each having its own individual and more or

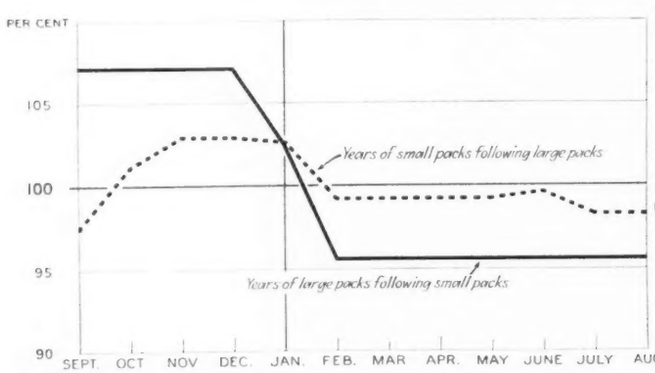
(*Turn to page 62*)



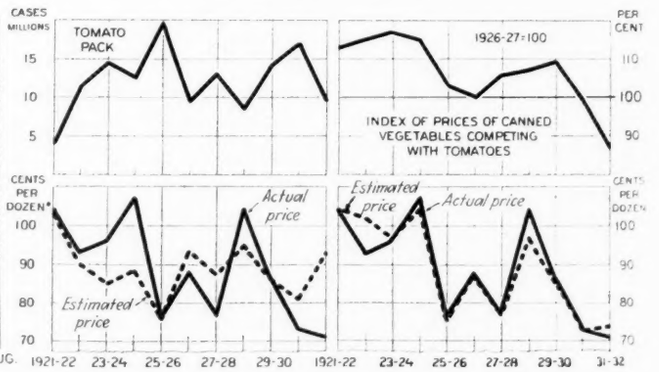
Canned corn pricing requires knowledge of pack, carryover and employment. Estimate from pack only is obviously in error; estimate from pack and carryover is also wrong; final estimate is from pack, carryover and employment. It closely approximates the actual price.



Forecast of average annual price of canned peas is based on pack, carryover and employment. First estimate, based only on pack, and second estimate, including also carryover, fail to forecast actual prices. Final estimate hides behind the actual price line.


PER CENT
Years of small packs following large packs
Years of large packs following small packs
SEPT. OCT NOV DEC. JAN. FEB. MAR APR. MAY JUNE JULY AUG.

Canned corn perplexes many under supply-demand conditions like these. Price expressed is per cent of the season's average. Years 1921-22 and 1927-28 were years of short pack preceded by years of large pack, and 1925-26 vice versa.



The price forecast for canned tomatoes is based on pack, carryover and the 2-year index of prices of competing vegetables—corn, peas, string beans, spinach, lima beans and beets. Estimate at left uses pack only; at right uses both.

NEW PRODUCTS
NEW METHODS

Three Cake Mixes

Three new dry cake mixes have been added to the series of mixes manufactured by P. Duff & Sons, Inc., Pittsburgh, Pa. These include devil's food mix, spice cake mix, and fruit cake mix, all "made with Duff's molasses." The fruit cake mix is packaged in 17-oz. cans and the other two

mixes in 14½-oz. cans. All are ready to bake after liquid has been added. Aside from the direct value of the mixes as marketable products, they provide a sizable outlet for Duff's molasses.

Bahaman Conch Chowder

El Cobo, the great Bahaman conch, said to have been regarded a superior article of food by people of the West Indian Islands for centuries, has been made available for general consumption. From the meat and juice of this sea food, Bahama Isles Foods Corp., Miami, Fla., is manufacturing a conch chowder, a "pick-up" cocktail and a tonic. The chowder, packed in 10½-oz. and 20½-oz. cans, contains meat of the conch and vegetables. The cocktail combines the juice of the conch with tomato juice and is spiced to make it appetizing.

The tonic, known as Marevēta, consists of concentrated juice of el Cobo and an aqueous extract of the fruit of the palmetto. The chowder is held to be highly nourishing, and it is advertised as a meal in itself.

Canned Jellied Salads

After perfecting a "vegetable gelatin" that will blend with other foods and stand cooking and sterilization under pressure, without losing its jelling quality and flavors, The Family Kitchen, Inc., San Francisco, Calif., is placing on the market jellied chicken, tuna and vegetable salads. These products, bearing the trade name "High-Noon," are to be followed by jellied fruit salad and other combinations. The salads are put up in 10½-oz. cans, ready to serve.

The gelatin used in making these foods will stand up under a temperature of 250 deg. F. while being sterilized and will withstand any climatic condition or heat up to 180 deg. F. before melting, it is asserted. The salads are attractive in appearance and are held to be exceptionally palatable, since all the liquid juices and bouillons are saved by solidifying and incorporating them into the jelly.

Irradiated Milk

Vitamin D liquid milk produced by direct irradiation with ultra-violet light is the newest thing in health foods. To accomplish the irradiation, the milk is exposed to ultra-violet light while flowing in a thin film over the inner surface of a large cylinder, a carbon-arc lamp being suspended from the center so that all the milk is equidistant from the source of light. This arrangement makes the irradiation uniform and controllable.

The process is based upon the discovery by Dr. Harry A. Steenbock, and the Wisconsin Alumni Research Foundation holds the patent rights.

"Fresh" Juice in Cans

After seven years of experimental work, Tropical Juice Corp., Titusville, Fla., has perfected a new method of processing orange and grapefruit juice which is said to retain the full, rich flavor and vitamin content of the fresh fruit. No preservatives are employed.

The company uses only tree-ripened oranges and grapefruit with a 12 to 1 sugar-acid ratio. In extracting the juice, the fruit is fed into a cutter comprising two cupped wheels rotating in synchronism in opposite directions and placed tangential to each other. An individual orange or grapefruit is caught in a cup on one wheel and closed upon by the corresponding cup in the opposite wheel. Between the two wheels is a V-shaped, stationary knife which cuts the fruit in half. The two

halves remain in the cups, and as they reach the lowest point in the travel of the wheels, rotating burrs automatically raise and squeeze out the juice. The juice drains into sanitary pipes and passes through strainers and filters to a secret heat and pressure treatment, the heart of the process. It is then canned under vacuum and aged in a refrigerated room for three days.

The juices are packed in 12-oz. and 55-oz. cans and carry labels distinguished by a band of giraffe necks.

Rattlesnake in Tins

It may not be new in the strict sense of the word, but the canned rattlesnake meat introduced in April, 1931, by Floridian Products Corp., Arcadia, Fla., is unusual, to say the least.

To get the supply of raw material, the Floridian company hunts the diamondback rattlesnake in its native haunts. The quarry is killed instantly and decapitated, removing all poison. Then it is hung up and bled and the carcasses are removed to the cleaning and dressing department, where the skin is slit the length of the belly and peeled off. One motion removes the entrails and another severs the carcass from 6 to 10 in. above the rattle. The meat is then removed from the bones and cooked, after which it is put with a delicately flavored "supreme" sauce, wrapped in parchment paper and packed in tins.

Comparing the Census Statistics

	Number of Establishments			Number of Wage Earners			Wages in Dollars		
	1931	1929	1927	1931	1929	1927	1931	1929	1927
Bakery Products	17,714	20,785	18,129	183,000	200,841	171,995	238,559,606	274,561,581	236,225,862
Beverages	4,237	5,154	4,769	23,856	28,281	26,972	30,026,849	38,314,414	36,100,934
Canned and Preserved Foods	2,829	3,345	2,773	88,608	112,478	93,574	59,154,236	83,777,648	70,415,241
Fish, Crabs, Oysters, etc.	299	348	337	8,561	13,612	12,650	5,208,400	8,779,058	8,105,581
Fruits and Vegetables, Preserves	2,530	2,997	2,436	80,047	98,866	80,924	53,945,836	74,978,590	62,309,660
Confectionery	1,635	2,117	2,017	58,551	72,015	72,114	50,691,172	66,953,681	67,047,189
Chewing Gum	31	37	40	2,106	2,265	2,524	2,418,417	2,732,946	2,727,236
Chocolate and Cocoa Products	50	59	69	5,610	6,249	6,427	6,574,936	7,778,061	7,339,405
Confectionery	1,554	2,021	1,908	50,835	63,501	63,163	41,697,819	56,442,674	56,980,548
Grain Mill Products	3,396	4,981	4,642	40,254	45,918	45,666	47,723,035	59,274,747	58,130,407
Cereal Preparations	106	121	77	6,941	6,488	6,028	8,897,945	8,875,622	8,417,246
Feeds, Prepared, for Animals	799	750	447	8,449	10,223	7,632	9,401,517	12,821,386	9,702,954
Flour and other Grain Mill Products	2,410	4,022	4,035	22,833	27,028	29,982	27,291,007	35,072,386	37,559,472
Malt	27	28	23	540	590	500	866,480	1,056,759	904,420
Rice, Cleaned and Polished	54	60	60	1,491	1,589	1,524	1,266,086	1,448,594	1,546,315
Manufactured Ice	4,010	4,110	3,159	24,876	32,184	22,120	33,290,741	42,399,295	32,611,118
Meats and Meat Products	2,428	2,443	1,755	119,650	136,171	124,062	148,485,460	182,002,150	169,047,504
Meat Packing House Products	1,209	1,277	1,250	106,594	122,505	119,095	134,358,991	165,867,420	161,583,827
Poultry, Dressed	493	485	.....	6,942	7,769	.....	5,904,715	7,284,558	.....
Sausage, Meat Puddings	726	681	505	6,114	5,897	4,967	8,221,754	8,850,172	7,463,677
Milk Products	9,140	9,970	9,682	42,435	51,962	52,933	54,809,463	71,384,580	72,728,005
Butter	3,360	3,527	3,519	15,612	19,097	20,096	18,687,356	24,197,840	25,532,586
Cheese	2,383	2,758	2,738	2,963	3,401	3,520	3,564,383	4,588,067	4,897,205
Condensed and Evaporated Milk	485	535	464	6,121	7,065	7,390	7,256,004	8,795,629	9,190,599
Ice Cream	2,912	3,150	2,961	17,739	22,399	21,927	25,301,720	33,803,044	33,107,615
Sugar	154	173	153	20,007	23,727	22,369	23,900,522	29,513,699	28,056,380
Beet Sugar	67	82	79	6,241	7,496	7,402	7,548,337	10,020,743	9,709,969
Cane Sugar, Domestic	68	70	53	2,032	2,319	971	1,332,665	1,642,463	639,154
Cane Sugar, Refined	19	21	21	11,734	13,912	13,996	15,019,520	17,850,493	17,707,257
Other Food Products	3,003	3,314	2,768	49,455	53,146	50,897	51,160,050	59,463,170	57,995,640
Baking Powder, Yeast	41	48	47	2,691	3,006	3,032	4,484,365	4,846,730	4,793,624
Coffee and Spices	883	928	784	8,540	9,053	8,195	9,533,170	10,606,360	9,537,473
Corn Syrup, Corn Oil and Starch	42	35	26	6,580	6,730	6,972	7,869,635	9,872,909	10,489,679
Flavoring Extracts and Syrups	590	642	500	4,916	5,041	5,011	6,498,144	7,070,860	7,134,274
Liquors, Vinous	14	24	13	96	186	150	118,581	277,963	177,073
Macaroni, Spaghetti	306	353	353	4,764	5,072	4,587	4,473,494	5,384,353	5,070,936
Oleomargarine	32	41	36	1,043	1,534	1,502	1,352,161	2,263,700	2,258,464
Processed Nuts	151	169	144	7,392	7,933	7,376	2,849,759	3,079,740	3,287,114
Shortenings and Veg. Cooking Oils	49	40	33	3,685	2,996	2,655	4,004,017	3,381,248	2,624,371
Vinegar and Cider	137	172	158	848	979	1,123	881,446	1,021,581	1,235,996
Miscellaneous Food Preparations	758	862	674	8,900	10,616	10,294	9,095,278	11,657,726	11,386,636
Total for Food Industries	48,546	56,392	49,847	650,692	756,723	682,702	737,801,134	907,644,965	828,358,280
Total for All Industries	174,136	210,959	191,866	6,511,647	8,838,743	8,353,977	7,225,587,464	11,620,973,254	10,848,802,532

What Makes the Price of Canned Vegetables?

(*Continued from page 60*)

less measurable influence. The eight price-influencing factors discussed are: (1) pack; (2) carryover from the previous packing season; (3) consumer purchasing power (Federal Reserve Board, Index of Employment); (4) imports, both fresh and canned; (5) competing supplies of fresh vegetables; (6) home canning; (7) competition in the case of each commodity from other canned vegetables; and (8) influence of the price level of all canned vegetables as a group on the fluctuations in price of each of the commodities.

The most important of the price influencing factors associated with different vegetables follow:

Canned corn and peas: (1) pack; (2) carryover from previous season; (3) consumer purchasing power.

Canned tomatoes: (1) pack; (2) consumer purchasing power.

String beans: (1) pack; (2) supplies of other canned vegetables; (3) supplies of string beans on the fresh market.

Spinach: (1) pack of spinach for the current year; (2) pack of spinach for the previous year; (3) consumer purchasing power.

Canned peas appear to compete with all vegetables rather than against any one in particular. Prices of canned peas, especially for the standard and extra standard grades, according to Mr. Campbell, have been affected during the last ten years for the most part by the size of the pack, the size of the carryovers and the consumer purchasing power.

Canned tomatoes are in competition with all canned vegetables, and imported canned and fresh tomatoes and particularly with fresh vegetables in winter. Size of the pack is the most important factor. Apparent consumption has averaged 12 to 13 million cases of No. 3's. Consumption has held up to the 10-year average during the past two years, although other canned vegetables have lost ground. Low price is believed to explain it. Increased consumption of fresh and imported tomatoes has been offset by growing consumption of tomato juice.

The curves illustrate briefly the application of the various influences to a forecast of prices. If the forecast curve is hidden by the actual-price line, the forecast has been accurate.

Prices of other seasonal commodities also have often failed to respond to what one would expect to be the controlling

Estimated and Actual Prices Per Dozen, No. 2 Cans of Fancy Canned Spinach 1921-22 to 1931-32

Year beginning April 1	Spinach pack[1] 1,000 cases[3]	Index of prices of canned vegetables competing with spinach, 1926–27 = 100[2]	Estimated from pack, Cents	Corrections for— Previous year's pack, Cents	Competing prices Cents	Estimated from these three factors Cents	Actual price Cents	Deviations of estimate from actual price, Cents
1920–21	685	.....	.....	.....	.....	.....	.....	.....
1921–22	434	105	127.5	+ 6.5	+ .5	134.5	135	— .5
1922–23	1,181	105	124.5	+ 7.5	+ .5	132.5	132	+ .5
1923–24	1,384	109	123.0	+ 4.0	+ 2.0	129.0	128	+1.0
1924–25	1,073	110	124.5	+ 3.0	+ 2.0	129.5	130	— .5
1925–26	1,806	100	121.0	+ 4.5	— 4.5	121.0	121	0
1926–27	1,340	100	123.0	+ 1.0	— 4.5	119.5	120	— .5
1927–28	1,969	102	120.5	+ 3.5	— 3.0	121.0	121	0
1928–29	2,905	112	116.0	+ .5	+ 2.0	118.5	117	+1.5
1929–30	4,194	107	115.0	— 4.0	+ 2.0	115.0	115	—2.0
1930–31	1,565	97	122.0	—10.0	— 8.0	104.0	102	+2.0
1931–32	1,340	80	123.0	+ 2.5	—24.5	101.0	101	0

[1] National Canners' Association, 1921-22 to 1926-27; U. S. Department of Commerce, 1927-28 to 1931-32.
[2] Constructed in the Division of Statistical and Historical Research, U. S. Department of Agriculture (includes prices of corn, peas, tomatoes, beets, snap beans, and lima beans, weights by packs of each).
[3] 24 No. 2 cans.

of the Food Industries

Cost of Materials, Supplies, Fuel, Power—Dollars			Value of Products—Dollars			Value Added by Manufacture—Dollars		
1931	1929	1927	1931	1929	1927	1931	1929	1927
504,109,711	737,099,500	693,236,163	1,189,228,490	1,526,110,811	1,394,700,224	685,118,779	789,011,311	701,464,061
75,921,541	103,026,180	95,430,198	212,277,278	270,323,803	242,694,456	136,355,737	167,297,623	147,264,258
349,951,467	515,302,039	398,077,158	554,632,408	831,190,554	637,428,049	204,680,941	315,888,515	239,350,891
28,316,568	53,239,911	42,891,556	42,215,507	80,848,513	65,082,187	13,898,939	27,608,602	22,190,631
321,634,899	462,062,128	355,185,602	512,416,901	750,342,041	572,345,862	190,782,002	288,279,913	217,160,260
204,923,340	317,973,017	335,962,909	418,709,646	572,970,668	576,651,892	213,786,306	254,997,651	240,688,983
16,584,817	23,231,172	27,167,504	50,798,202	60,160,126	62,001,320	34,213,385	36,928,954	34,833,816
45,166,087	79,549,371	90,422,852	86,002,652	119,540,693	122,723,229	40,836,565	39,991,322	32,300,377
143,172,436	215,192,474	218,372,553	281,908,792	393,269,849	391,927,343	138,736,356	178,077,375	173,554,790
737,248,128	1,355,631,102	1,372,802,506	1,005,893,082	1,710,641,793	1,678,520,106	268,644,904	355,010,682	305,717,600
67,828,366	101,471,521	91,748,332	138,492,582	175,223,126	155,563,286	70,664,216	73,751,605	63,814,954
162,833,833	327,919,743	244,675,705	209,921,164	402,752,534	299,792,642	47,087,331	74,832,791	55,116,937
461,023,765	868,872,569	972,711,040	597,980,762	1,060,269,418	1,148,760,360	136,956,997	191,396,849	176,049,320
13,919,952	18,923,740	17,186,750	19,357,660	23,602,938	20,274,172	5,437,708	4,679,189	3,087,422
31,642,262	38,443,529	46,480,679	40,140,914	48,793,777	54,129,646	8,498,652	10,350,248	7,648,967
34,628,747	39,808,164	40,815,512	190,010,190	210,952,264	184,794,988	155,381,443	171,144,100	143,979,476
1,972,277,207	3,162,364,950	2,723,956,002	2,356,477,077	3,673,061,522	3,138,764,017	384,199,870	510,696,572	414,808,015
1,837,568,298	2,974,127,757	2,663,740,403	2,177,236,785	3,434,654,098	3,057,215,718	339,668,487	460,526,341	393,475,315
77,095,389	106,865,506	.....	96,954,468	130,161,230	.....	19,859,079	23,295,724	.....
57,613,520	81,371,687	60,215,599	82,285,824	108,246,194	81,548,299	24,672,304	26,874,507	21,332,700
666,310,358	1,048,352,007	1,048,406,378	946,197,017	1,394,585,963	1,359,189,715	279,886,659	346,233,956	310,783,337
392,004,239	635,873,586	637,336,685	462,070,370	746,417,620	739,010,876	70,066,131	110,544,034	101,674,191
54,049,444	92,727,217	100,787,583	68,020,865	110,644,732	118,447,757	13,971,421	17,917,515	17,660,174
109,398,438	163,786,818	159,680,081	148,598,031	209,109,700	200,086,091	39,199,593	45,322,882	40,406,010
110,858,237	155,964,386	150,602,029	267,507,751	328,413,911	301,644,991	156,649,514	172,449,525	151,042,962
408,264,984	521,582,617	636,441,459	494,956,767	634,267,635	710,381,336	86,691,783	112,685,018	73,939,877
62,324,565	70,960,908	79,016,770	85,672,749	108,552,581	104,926,584	23,348,184	37,591,673	25,909,814
10,007,813	12,222,558	5,830,411	13,981,079	18,325,792	8,009,120	3,973,266	6,163,254	2,178,709
335,932,606	438,399,151	551,594,278	395,302,939	507,389,262	597,445,632	59,370,333	68,990,111	45,851,354
565,933,380	854,350,507	794,129,965	884,838,925	1,254,269,000	1,151,144,108	318,905,545	399,918,493	357,014,143
19,695,930	22,598,378	24,619,450	43,137,665	52,336,812	55,716,025	23,441,735	29,738,434	31,096,575
191,826,923	332,150,200	284,652,793	267,063,304	424,344,837	384,281,306	75,236,381	92,194,637	99,628,513
53,463,069	104,284,827	90,905,776	97,695,478	165,983,739	134,461,166	44,232,409	61,698,912	43,555,390
45,556,425	55,517,926	51,090,727	111,525,934	129,086,237	107,219,395	65,969,509	73,568,311	56,128,668
381,452	608,857	1,206,217	949,279	2,447,912	2,692,856	567,827	1,839,055	1,486,639
20,293,901	27,336,126	27,433,792	36,215,652	47,074,230	45,353,200	15,921,751	19,738,104	17,919,408
15,269,214	30,890,075	27,145,141	22,817,501	46,521,823	39,282,364	7,548,287	15,631,748	12,137,223
26,412,739	39,529,486	45,890,488	36,880,120	49,608,894	55,949,802	10,467,381	10,079,408	10,059,314
98,949,812	139,030,964	137,078,600	114,376,665	154,553,197	148,468,076	15,426,853	15,522,233	11,389,476
4,248,686	6,016,029	5,858,241	7,506,009	10,450,332	10,755,246	3,257,323	4,434,303	4,897,005
89,835,229	96,387,639	98,248,740	146,671,318	171,860,987	166,964,672	56,836,089	75,473,348	68,715,932
5,519,568,863	8,655,490,083	8,139,258,250	8,253,220,880	12,078,374,013	11,074,268,891	2,733,651,967	3,422,883,921	2,935,010,641
21,420,124,017	38,549,579,732	35,133,136,889	41,333,108,998	70,434,863,443	62,718,347,289	19,912,984,981	31,885,283,711	27,585,210,410

factor: size of pack plus carryover from a preceding year. In a vague way we have been aware of the importance of buying power but have never been able to evaluate the corrective factor to apply to a price. Similarly it has not previously seemed practical to express as a corrective factor the effect of inter-commodity competition direct, such as canned foods of a similar type, or indirect, such as canned foods of a different type or the available fresh food supplies.

From the work of Mr. Campbell it is evident that these corrective factors may be evaluated in terms of arithmetical figures, and from the table of data presented herewith it is evident that a fairly close approximation can be made. Conceivably there are still other factors involved, such as the influence of the temperatures on consumption or the relative cheapness of the companion protein food (see page 81, March, 1932, FOOD INDUSTRIES). But even without them the method of forecasting a price holds promise of a considerable value, not only to canners but to all producers of seasonal commodities.

It will tend to stop endless controversies about who put the price where it is and affords a means of reasoning backward from a projected set of conditions to a packing schedule on a rational basis. Likewise it puts a premium on knowledge of conditions outside one's immediate industry and on foresight.

The table illustrates the manner in which the corrective factors have been applied in testing out the method of forecasting prices. The results are surprisingly close to the actual prices. In this connection attention is directed to the trends of spinach production in the article on pages 58 and 59, which enable one further to forecast probable computations with this particular canned vegetable.

Production of Foods Shows Minor Changes

	1931	1929	1927
Bakery Products	[2,315,419,000 lb.	13,246,035,000 lb.	11,691,332,000 lb.
Beverages	336,000,000 gal.	386,000,000 gal.	334,000,000 gal
Canned and Preserved Foods	6,995,000,000 lb.	8,461,039,000 lb.	6,764,746,000 lb.
Fish, Crabs, Oysters, etc	591,000,000 lb.	1,030,000,000 lb.	565,000,000 lb.
Fruit and Vegetables, Preserves	6,404,000,000 lb.	7,431,039,000 lb.	6,199,746,000 lb.
Confectionery	2,084,650,000 lb.	2,455,370,000 lb.	2,161,908,000 lb.
Chewing Gum	92,360,000 lb.	109,400,000 lb.	112,730,000 lb.
Chocolate and Cocoa Products	534,914,000 lb.	557,126,000 lb.	520,578,000 lb.
Confectionery	1,457,376,000 lb.	1,788,844,000 lb.	1,528,600,000 lb.
Grain Mill Products	58,403,794,000 lb.	67,439,400,000 lb.	62,470,758,000 lb.
Cereal Preparations	2,475,558,000 lb.	2,510,529,000 lb.	2,418,399,000 lb.
Feeds, Prepared, for Animals	16,500,000,000 lb.	22,300,000,000 lb.	18,000,000,000 lb.
Flour and Other Grain Mill Products	36,794,988,000 lb.	39,911,544,000 lb.	39,531,053,000 lb.
Malt	1,190,000,000 lb.	1,296,500,000 lb.	1,100,000,000 lb.
Rice, Cleaned and Polished	1,443,248,000 lb.	1,420,827,000 lb.	1,421,306,000 lb.
Manufactured Ice	83,826,064,000 lb.	88,954,426,000 lb.	80,574,054,000 lb.
Meats and Meat Products	16,117,333,000 lb.	16,984,608,000 lb.	16,188,686,000 lb.
Meat Packing House Products	14,394,805,000 lb.	15,079,042,000 lb.	15,154,801,000 lb.
Poultry, Dressed	404,541,000 lb.	396,776,000 lb.	.....
Sausage, Meat Puddings	1,317,987,000 lb.	1,508,790,000 lb.	1,033,885,000 lb.
Milk Products	6,090,055,000 lb.	6,413,163,000 lb.	5,776,128,000 lb.
Butter	1,648,911,000 lb.	1,618,091,000 lb.	1,564,673,000 lb.
Cheese	567,977,000 lb.	588,026,000 lb.	518,198,000 lb.
Condensed and Evaporated Milk	2,622,280,000 lb.	2,808,161,000 lb.	2,431,566,000 lb.
Ice Cream	230,177,000 gal.	279,777,000 gal.	252,338,000 gal.
Sugar	11,572,983,000 lb.	12,801,285,000 lb.	12,217,771,000 lb.
Beet Sugar	2,330,054,000 lb.	2,172,110,000 lb.	1,798,792,000 lb.
Cane Sugar, domestic	352,742,000 lb.	359,678,000 lb.	112,984,000 lb.
Cane Sugar, refined	8,890,187,000 lb.	10,269,497,000 lb.	10,305,995,000 lb.
Other Food Products	10,486,428,000 lb.	11,430,257,000 lb.	10,366,120,000 lb.
Baking Powder, Yeast	463,425,000 lb.	541,145,000 lb.	451,103,000 lb.
Coffee and Spices	1,257,359,000 lb.	1,227,514,000 lb.	1,119,394,000 lb.
Corn Syrup, Corn Oil and Starch	2,818,454,000 lb.	3,477,063,000 lb.	3,331,783,000 lb.
Flavoring Extracts and Syrups	1,090,884,000 lb.	888,853,000 lb.	775,249,000 lb.
Liquors, Vinous	1,900,000 lb.	2,400,000 lb.	2,500,000 lb.
Macaroni, Spaghetti	524,448,000 lb.	555,621,000 lb.	492,784,000 lb.
Oleomargarine	231,192,000 lb.	370,300,000 lb.	294,067,000 lb.
Processed Nuts	435,759,000 lb.	528,473,000 lb.	551,845,000 lb.
Shortenings and Veg. Cooking Oils	1,776,007,000 lb.	1,811,888,000 lb.	1,748,395,000 lb.
Vinegar and Cider	82,410,000 gal.	111,200,000 gal.	83,900,000 gal.]
Miscellaneous Food Preparations	1,200,000,000 lb.	1,100,000,000 lb.	900,000,000 lb.
Total All Processed Foods	210,681,726,000 lb.	231,385,583,000 lb.	210,961,503,000 lb.

Where census reports have given only dollar volume, this figure has been converted to estimated pounds or gallons by FOOD INDUSTRIES.

Census figures omit many important branches of industry such as fluid milk industry, frozen food, and fresh-fish or oyster industry, because of an arbitrary definition of industry. It is impossible to calculate the American diet from these figures, not only on account of these omissions but because well over one-quarter of the sales of food materials are resold to other food industries for further manufacture.

Rockwood & Co. Improves Product by Lowering Cost

By E. S. STATELER
Assistant Editor, Food Industries

Uses Equipment From Other Industries

A cleaner from the peanut industry and a conveyor from the cereal industry help chocolate manufacturer solve production problem.

EXTENSIVE changes involving the expenditure of large sums are not essential to keeping a plant up to date and on a low-production-cost basis. These results frequently can be obtained by a slight deviation from tradition and custom and by making use of methods and equipment developed for use in other industries. In such instances the capital investment usually is low and capable of being amortized by the savings thus made possible.

An example of such an installation is found in the new step that Rockwood & Co. has added to its handling of cocoa nibs. This new step utilizes equipment familiar to the shelled-nut and the flour industries and improves the quality of the chocolate and cocoa products, as well as reduces cost of production.

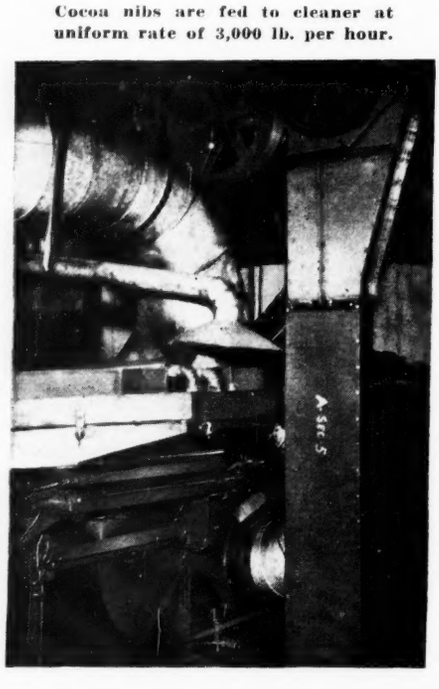
In usual practice cocoa beans are run through a shaker screen and suction cleaner before roasting to remove stones, pieces of wood, and other undesirable objects. After cooling, the roasted beans pass over an electromagnet to remove bits of iron and steel before entering the cracker and fanner unit where the cocoa meats or nibs are freed from shells, dirt, and chaff by a revolving screen through which blows a current of fan-driven air.

Theoretically, these treatments produce cocoa nibs free from foreign substances which cause an undue wearing action on the buhrstone mills during the grinding of nibs to liquor, or on other grinding equipment incident to the manufacture of chocolate coatings. Practically, however, there remain small stones picked up with the beans in the suction cleaner, pieces of thick shell too heavy to be blown out of the nibs as they pass through the fanner, and particles of clay and sand which cling to the beans until they are broken up in the cracker and fanner.

In addition to the unnecessary wearing and breakage in the liquor mills and coating machines caused by these stray substances one has to reckon with the increase in the fibrous and insoluble material content of the finished product. In these days of strenuous competition that factor, even though it is within the limits set by government standards, may be used by buyers as a lever to force a lower price or as an excuse for buying elsewhere.

It is for the removal of these materials that Rockwood & Co., in spite of already having what has been considered the most up-to-date equipment for cleaning cocoa nibs, has installed the supplementary unit to treat the nibs as they pass from the cracker and fanner unit to the appropriate hopper bins. The cleaners are of the vibrating riffle type with an air separator attachment and are commonly used to clean shelled peanuts and similar products. Each has a capacity of from 3,000 to 5,000 lb. of nibs per hour. So effective are these cleaners in their operation that along with their removal of the objectionable substances they include enough of the extra large nibs to justify a rerun of each week's accumulation. On first thought, this rerun accumulation indicates unsatisfactory performance, but when one considers how expensive is the repair and maintenance of liquor mills and the coating equipment he can appreciate the wisdom of doing a thorough job of cleaning the nibs before grinding, even to the point of removing some of the larger nibs with the stones. These nibs can be readily recovered.

Cocoa nibs are fed to cleaner at uniform rate of 3,000 lb. per hour.



Another feature of this cleaner installation is the manner in which the nibs are conveyed from the cracker and fanner unit to the cleaner and returned to the original conveying equipment for transfer to the hopper bins.

Before the supplementary cleaners were installed, as is common practice, the nibs discharged from each fanner into a horizontal screw conveyor which fed the nibs to a vertical bucket elevator to be hoisted to the floor above and distributed to the proper bins. These bucket elevators have a maximum capacity of 6,000 lb. per hour and are likely to become clogged if overloaded and to break down if the chain links become spread for any reason, such as catching of the bucket on any obstruction, chain jumping off the sprocket drive, or too constant usage without replacement of chain.

When the cleaners were installed, 5-in. Redler conveyors were suspended from the ceiling of the room below in such a way that the nibs feed directly from the fanners through hopper openings in the floor into the horizontal portions of the conveyors, which extend along the ceiling of this room to a point below and slightly to one side of the base of each cleaner. Here each conveyor takes a vertical direction through the ceiling and floor alongside the cleaner and extends upward sufficiently to permit discharge of nibs direct into the hopper of the cleaner.

Through the steel, rectangular-shaped housing of this conveyor system is drawn a steel cable to which are fastened, at regular intervals of a few inches, H-shaped elements. The elements are bolted to the cable at their crossbars and lie in the horizontal portion of the conveyor in such a way that they exert a top and bottom pulling and packing action on the nibs and force

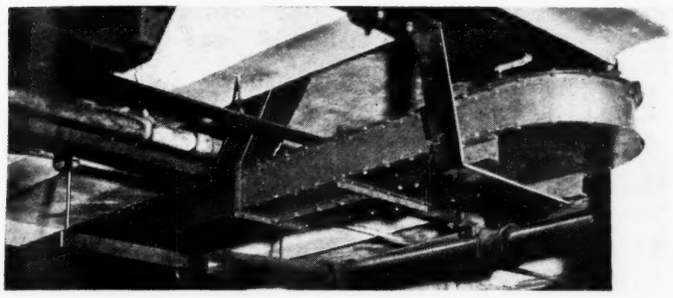
the nibs into the vertical portion, where they are given an additional upward motion by the slight lifting action of the H-shaped elements. This lifting action is obtained primarily because the friction between the individual nibs is greater than the force of gravity on each nib and prevents the H-shaped elements from pulling through the column of nibs.

To maintain this upward movement of nibs in the vertical shaft of the conveyor it is necessary only to have the H-shaped elements operate through as little as two to three feet of horizontal space between the hopper opening and the base of the vertical shaft. Including the portion of the horizontal leg taken up by the hopper opening and the terminal pulley, the horizontal section need not be more than 8 to 10 ft. long, depending on the inside dimensions of the housing. However, this horizontal leg may be as long as necessary to convey material from point of loading conveyor to point of vertical lift.

The cable bearing these H-shaped elements is drawn through the housing of both the horizontal and the vertical portions of this conveyor system by a notched terminal pulley connected to a ½-hp. motor operating at 1,200 r.p.m. through speed reducers giving a 279:1 reduction. This reduction is obtained by using a speed reducer having a 31:1 ratio, a chain drive having a 3:1 ratio and a belt drive having a 3:1 ratio. It gives the conveyor a speed of 10 ft. per minute and delivers nibs to each cleaner at the rate of 3,000 lb. per hour. If desired, the speed of the conveyor can be increased to deliver as much as 5,000 lb. per hour.

The manner in which this conveyor system delivers its load is such that there is a uniform and continuous flow of nibs to each cleaner. The cleaner is adjusted to take care of the nibs as fast as they are delivered and to discharge the cleaned nibs to the screw conveyor and bucket elevator of the original installation at a uniform rate, so that there is minimum reason for the bucket elevator becoming clogged or broken down because of overloading or irregular feeding.

Thus by making use of an unusual type of conveyor, which was originally designed for handling bulk flour, in connection with an improved method of cleaning cocoa nibs Rockwood & Co. makes a two-way saving in production costs as well as raises the quality of its chocolate and cocoa products.



Floor space is saved by suspending horizontal leg of conveyor from ceiling of room below and loading through chute in floor.

ABSTRACTS OF CURRRENT LITERATURE

ADULTERATED BUTTER. Aldo Nembrot and Marcello Ceola. *Giornale di chemica industriale ed applicata,* Vol. 14, pp. 497-498; October, 1932.

The use of triacetin as a masking agent to conceal the adulteration of butter with margarin has increased to such an extent as to require attention. Triacetin is an effective masking agent, because it restores both the Reichert-Meissl number and the Zeiss refractometer reading to within the limits prescribed by law for genuine butter. It presents the added difficulty of being easily miscible both with butter fat and with the cheaper fats used as adulterants. As the usual official tests fail to detect such adulteration, a new test is needed. It has been found that treatment of the suspected butter with 50 per cent aqueous alcohol counteracts the masking effect of the triacetin and makes the regular Reichert-Meissl and refractometer tests once more effective. Directions are given for the treatment, so that attempts to conceal the presence of margarin in butter can now be readily detected.

* * *

RESEARCH ON CANE WAX IN RAW AND REFINED SUGARS. C. F. Bardorf and J. A. B. Ball. *Journal of Physical Chemistry,* Vol. 36, pp. 2940-2947; December, 1932.

A review of work on this subject shows that acetone soluble wax is the predominant colloid in granulated sugar. Other practical aspects of colloid phenomena in the sugar industry are given.

THE MEASUREMENT OF GAS CONCENTRATIONS FOR THE CONTROL OF FUMIGATION. A. B. P. Page. *Chemistry and Industry,* Vol. 51, pp. 369T-374T; Nov. 11, 1932.

Experience in the control of practical fumigation has shown the need of a satisfactory piece of apparatus for the measurement of gas concentrations. Improved forms of the vacuum bottle are described in detail.

* * *

THE EFFECT OF FEEDING IRRADIATED ERGOSTEROL TO COWS ON THE VITAMIN D CONTENT OF MILK. W. E. Krauss, R. M. Bethke and C. F. Monroe. *Journal of Nutrition,* September, 1932.

Varying amounts of irradiated ergosterol in corn oil were given over three-week periods to two Holstein cows and butter fat from the milk produced was given to rachitic rats to test its curative value, and to normal rats as a prophylactic agent. The irradiated ergosterol was given in the amounts of 5, 10, 25 and 100 mg. daily. Examination of the animals showed that 100 mg., or 200,000 rat units, were necessary to prevent or cure rickets in rats. Other experiments on chickens indicated that while the activated milk had some beneficial effect, cod liver oil was more successful. The practical value of activating milk by feeding the cow irradiated ergosterol is discussed from the standpoint of uniformity in the vitamin D content of the milk produced and the effect on the cow of daily doses of irradiated ergosterol.

VITAMIN D FORTIFIED MILK. J. McK. Mitchell and others. *American Journal of Public Health,* Vol. 22, pp. 1220-1229; December, 1932.

A study of the protective value for infants of three types of vitamin D fortified milk shows a greater effectiveness of milk from irradiated cows than that of irradiated pasteurized milk or of "yeast milk" (milk from cows fed irradiated yeast). Carbon arc-lamp irradiation was used. This work emphasizes the importance of certain unknown and unmeasured facts in vitamin D fortified milk which deserves further study.

* * *

CEREAL FATS. S. C. L. Gerritzen and M. Kauffman. *Chemisch Weekblad,* Vol. 29, pp. 742-745; Dec. 17, 1932.

The fat contained in the germ of cereal grains is subject, like other edible fats, to spoilage by oxidation when exposed to air. A study has therefore been made of the mechanism by which wheat fat and rye fat turn rancid, in comparison with margarin and with the fat from a European variety of milk bread. Because some believe that bacterial action is essential to such spoilage, tests were made with sterilized and unsterilized samples; and because light accelerates many reactions of this kind, some tests were made in the dark and others in the light. The results show that these cereal fats require only oxygen—not light or bacterial action—for the oxidation type of spoilage. Sterilized samples oxidized as readily as those which were unsterilized; and darkness, while it may have retarded the process somewhat, did not stop it. Free fatty acids were formed in considerable quantity, including some of the volatile and water-soluble fatty acids; thus the spoilage was a typical reaction leading to rancidity.

Operating Motor Trucks

THESE two pages are devoted to the important subject of motor transportation in the food industries. Each month fundamental phases of motor transportation will be discussed. Companies represented by readers of FOOD INDUSTRIES own motor equipment costing tens of millions of dollars and approximately an equal amount to operate yearly.

● It is therefore evident how important it should be to keep abreast of all developments in the field to protect the enormous investment involved. A continuous striving should be maintained to discover new, better and cheaper methods.

● There is almost unanimous agreement as to the results to be obtained, but many differences of opinion as to the manner of accomplishment. So if the readers of these pages do not always agree with the deductions drawn from the fundamental facts presented, their views are cordially solicited for discussion in these pages or by correspondence.

More About the Multi-Man Milk Route Truck

IT IS admitted that the delivery of packaged goods is radically different from the delivery of milk and dairy products. However, from the standpoint of truck efficiency, both services partake of the same fundamental characteristics. In each case a motor truck travels from 5 to 10 or 15 miles per day, depending upon the proximity of the houses at which deliveries must be made. This truck is more nearly a repository for goods than a mobile vehicle whose function is merely to carry loads between given points as rapidly as its speed and traffic safety will permit.

In congested districts the function of the vehicle is to transfer the goods to some starting point in the area to be served, nominally called the route; to serve as a safe keeping place for the goods while the vehicle moves as close to the actual places of delivery as possible, and finally to return to the station from which it started with the goods which have not been delivered.

Sales Lost by Late Deliveries

In the above work there are time limits between which deliveries must be made to insure customer satisfaction. In the case of package deliveries the limits are 8 a.m. and 6 p.m., except at Christmas time. In the delivery of milk, except in cities where daylight deliveries between 8 a.m. and 4:30 p.m. are required by labor agreements, the limits usually are between 1 a.m. and 7 a.m., so that the housewife may have milk and cream in time for the husband's breakfast. If she does not get this delivery service regularly she is quite likely to shift her patronage to some other source of supply.

The package driver's check-up sheet for "paids" and "charges" is in part analogous to the milk driver's outgoing goods sheet. Just as the package driver marks his initial or that of his helper against the package delivered on the check-up sheet, the milk driver daily marks in his route book the particular items delivered to each customer. The package driver's C.O.D. sheet is analogous to the milk driver's route book total which is made up weekly. The package driver's return goods and send-again sheets are analogous to the milk driver's return goods and empty-bottle return sheets.

With the several comparable operations as outlined it should not be an insurmountable task to set up the necessary paper records to permit a two-man retail milk-route operation. It might even be possible to write up the route book in different colored pencils—blue for the driver and red for the helper—with commissions paid and collections made in accordance with the customer assignment. Another and probably better method might be to continue the driver as responsible for all customers and collections and to share the collection commissions and point bonuses with the one or more helpers, in accordance with some equitable percentage arrangement.

Under such an arrangement the unit cost of delivery by motor vehicle should be less than by horse and wagon, because of the greater number of deliveries made; notwithstanding the greater cost of operation of the motor truck. It is probable that a truck with at least twice the carrying capacity of the horse-driven wagon is necessary. If practice should confirm the reasoning outlined above, it would mark the passing of the horse from his last embattled stronghold: the retail milk route.

Such an arrangement of a two-man motorized retail milk route should have additional advantages for management. With an older man as driver and a younger man, 18 years old or over, as a helper, the helper could do the hard footwork on the route, such as the top-floor walk-up-apartment deliveries, and do it quicker and with less fatigue than the older driver. In such a set-up the management is continually building up a crew of trained young men for peak business periods and as replacements for drivers who leave the company employ.

Value of the Helper

The plan would also prove the solution of one of the serious present-day management problems: the carrying of unauthorized helpers on the route wagons. This is a rule violation punishable by dismissal. Yet it is continually winked at until the company is faced with a suit for damages for personal injuries to minors who have fallen off the wagon, been kicked or bitten by the horse, or have had a foot run over by a wagon wheel. Can it be possible that the wagon driver realizes the value of a helper and the management does not? And what better time than the present can be found for determining the economy of the driver-and-helper motorized retail milk route?

Adequate Brakes Measured by Stopping Distances

MANY large fleet operators in the food industries have found that setting up brake standards has paid good

dividends. These have been used for comparative purposes when checking the brakes on the companies' vehicles to determine whether each set of brakes tested could be considered adequate or not.

Adequate brakes have been found to reduce maintenance expense; to promote better truck performance and work ability; and to cut expenses, due to a reduction in the number of motor-vehicle accidents. But how shall adequate brakes be determined? It is generally agreed that the most reliable method of determination is to measure the stopping distance in feet when the vehicle is traveling at a known speed in miles per hour. This may be done by using the vehicle's speedometer to record the speed in miles per hour and a tape measure to determine the distance run in feet from the time the brake was fully applied until the vehicle came to rest.

Progressive fleet-maintenance superintendents have discarded the tape-measure method, however, and substituted for it the more accurate vehicle decelerometer. This instrument measures the stopping distance automatically, and no matter what the actual speed of the car or truck, gives a direct reading in feet as if the vehicle speed were exactly 20 miles per hour, the standard accepted speed for brake measurements. With the use of such an instrument, brakes are considered to be adequate or in good condition if the stopping distance indicates a braking ability of between 40 and 60 per cent of the maximum or theoretical 100 per cent braking ability.

Using the preceding fundamental data as a starting point and requiring that all brake tests shall be made on a level, dry, clean roadway free from loose materials and holes, several large fleet owners have set up brake standards. These require that all of their vehicles, both cars and trucks, shall have brakes that are capable of decelerating the vehicles when moving at the rate of 20 miles per hour so that they will stop in the following distances:

Service or Foot Brakes	Feet
Vehicle with two-wheel brakes.....	43.3
Vehicle with four-wheel brakes.....	22.2
Emergency or Hand Brakes	
Vehicle with two-wheel, four-wheel, or propeller shaft brakes.....	50.0

Operators of large or small fleets of motor vehicles may well ask their maintenance superintendents how the brakes of their vehicles compare on test with the above brake standards.

Ton-Mile Tax Will Add To Truck Owner's Burden

TO THE economic fundamentals of motor-truck taxation outlined briefly on page 20 of January, 1933, issue of FOOD INDUSTRIES, it is now proposed to add another: namely, that each truck using the highway to earn a profit shall be made to pay a ton-mile tax in addition to all existing license fees, gasoline taxes, property taxes, and "nuisance" taxes.

This proposal, put forth by the railroad interests and borrowed from street railway and bus franchise practice, was originally intended to apply only to overland motor haulers or common carriers transporting goods owned by others. Its purpose was to increase the cost of transporting goods by motor trucks so much that it would be more expensive to ship by motor than by rail.

In the State of Kansas, where such a ton-mile tax law was enacted, it was worded to apply to all trucks, either common carrier vehicles or privately owned trucks, which operated beyond a 25-mile radius from their home stations. Farm trucks and school buses were exempted from the provisions of the law.

Several private companies in the food industries, including the Continental Baking Co., General Baking Co., Schulze Baking Co. and others, each carrying its own goods in its own trucks, brought suit, alleging that the law was unconstitutional. The U. S. Supreme Court, however, in its decree dated May 23, 1932, rendered its opinion that the law was constitutional; that it was within the rights of the state to demand compensation for special facilities provided; and that no unconstitutional discrimination by reason of the law's exemptions had been proved.

Should such a law be enacted in other states, as is now proposed by the railroad interests, there is no telling how much truck transportation costs will be increased. Covering a route with a 25-mile radius, or a minimum daily mileage of 50, is considered only ordinary performance for the modern, speedy, pneumatic-tired truck. Such a law will affect country milk-haul routes, retail ice cream and bread routes, distribution milk routes between city pasteurization plants and suburban branches, suburban routes carrying fruits and vegetables; ice cream, bread, meat, and other food product routes between main plants and suburban branches. It may even affect the distant suburban retail milk routes.

Bases of Opposition

Many of the large fleet owners in the food industries are opposed to such a ton-mile tax law on the ground that it is unwarranted interference with their business and that railroads cannot duplicate at any price the service rendered by the trucks as at present operated. In the highly motorized states like New York, Illinois, Pennsylvania, New Jersey and Massachusetts they are also opposed to an additional ton-mile tax on the ground that present automotive tax income (with passenger cars and trucks) is more than ample for road building and maintenance purposes.

Many oppose such a tax because they believe that the use of the road and not the attempt to earn a profit should form the basis of equitable motor-vehicle taxes. They maintain that the gasoline tax provides for a proportional use of the roads in that the fuel used varies with the size of the vehicle and the mileage run. Accordingly, they declare, a ton-mile tax would be equivalent to double taxation.

Furthermore, close students of motor-vehicle taxation point out that if the attempt to earn a profit through the use of roads is to become a determining factor, the whole tax structure, as we know it now, will be revolutionized and set up a precedent which may throttle the entire use of automotive vehicles. If a truck which runs beyond a 25-mile radius has to pay such a tax, why not one which runs only 15 miles? Does not a salesman using a passenger car in the conduct of his business attempt to earn a profit by the use of the roads? And if so, is it not discriminatory if he, too, does not pay a tax? With such men paying such a tax, is not the next step to tax all passenger cars in accordance with their mileage run?

BOOK REVIEWS

RECENT SOCIAL TRENDS IN THE UNITED STATES. Report of the President's Research Committee on Social Trends. Published by McGraw-Hill Book Co., 330 West 42d St., New York, N. Y., 1932. Two volumes, 1568 pp., 6½x9½; cloth. Price, $10.

TO COMMENT on or even to outline the subject coverage of so vast a report as this in a space of less than ten thousand words is a hopelessly inadequate attempt, for in these volumes is a condensation of the accumulated social experience of the human race in the United States during the past thirty years. The five hundred specialists who have been consulted or who have directly contributed to this report, drawn from all walks of life, by their very number and training have insured a wide and complete study of American social trends.

If this study differs from other studies on social trends the difference lies not so much in the searching thoroughness, manifested by its very bulk, as by its completeness. Admittedly there are many forces, not directly social in their nature, that have an indirect bearing on the life of people. It is difficult to conceive of any of them, however, which have been omitted from appraisal and integration in this report. Examples of these indirect forces are mineral resources, soil erosion, tariffs, gas engines.

The report consists of committee findings based strictly on evidence, supplemented by 29 chapters on such subjects as Population, Agricultural and Forest Land, Invention and Discovery, People as Consumers, Rise of Metropolitan Communities, Rural Life. These supplementary chapters give a more liberal interpretation to the findings than the committee report itself, and many of them are vastly superior to the committee findings. The chapter on Shifting Occupational Patterns, for example, is particularly praiseworthy and is recommended to those who are toying with the ideas of technocracy as a very good antidote.

That the report of trends is not confined to the pure statistics is indicated by its discussion of birth control and contraception, concerning which there are obviously no statistics available. Yet the committee concludes: "Had no restriction been placed on the spread of birth-control information and had clinics been permitted to function freely, it is probable that birth control would have spread more evenly through social classes and that the decline in the birth rate among the poorer and less educated people would have been more closely comparable with the decline among the better educated and the well-to-do."

A few of the highlights in the committee findings which interest the food manufacturer particularly are the following:

"There has been no increase in crop acreage for 15 years, nor in acre yields of crops as a whole for 30 years, yet agricultural production has increased about 50 per cent since the beginning of the century. . . . Agricultural output per worker increased 22 per cent between the average of the decade 1912-1921 and the average of the decade 1922-1931."

"The advance of science and invention may be expected to continue. It may lead to the widespread adoption of mechanical corn harvesters and cotton pickers for the handling of two of our greatest crops, and to the wider use of other agricultural machines now in existence. If so, it will give a premium in crop production to the larger farms on the more level lands, and it will lead to reduction in the number of people engaged in commercial agriculture and to further shifts of population."

Referring to future population, the report says that "hardly more than 132 or 133 millions are to be expected by 1940," while the discussion of economic planning says that "the best which any group of economic planners can do with the data now at hand, bulky but inadequate, *is to lay plans for making plans.*" (The italics are the reviewer's.)

"We give not a tithe of the thought to this basic common interest [consumption of goods] which we give to the task of getting more dollars for our individual selves."

"The theory of democracy is that the people own the government, but practice does not always follow theory."

The importance of this report will become apparent with the passing of years. Probably no one will ever read it through any more than one reads an encyclopedia, yet it is a document equally as valuable. Those who direct the policy of business, both merchandising and distribution plans, as well as expansion or contraction of activity, will find the report worthy of careful study. In the readjustments of business and industry that are inevitable in the years to come, only those which are "right" with the times and trends will survive.—L. V. BURTON.

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CORN AND HOG SURPLUS OF THE CORN BELT. By Alonzo E. Taylor, director, Food Research Institute. Published by Food Research Institute, Stanford University, Calif., 1932. 658 pp., 6x8½; cloth; illustrated with maps and charts. Price, $4.50.

THE Food Research Institute was established at Stanford University in 1921 for research in the production, distribution and consumption of food. As a result of its activities, many important contributions to knowledge of the food industries have been published, of which the current work is one of the latest to come to hand.

This study of the situation in the corn- and hog-raising belt of the central United States was undertaken because the corn-hog economy of this region is the single most important influence in American agriculture, and its position has a profound effect on the general state of agriculture throughout the country.

All the basic statistics available concerning corn and hogs is studied. From these the conclusion is made that there is an absolute decrease in the domestic demand for these products, in spite of the gradual increase in population. This fact, coupled with other factors, such as improved agricultural and packing-house methods, quite aside from the export situation, is found to result in a continuing surplus of these products and an unsatisfactory price situation which throws the farm industries of the corn belt into chaos and has a disorganizing effect on all American food-raising and processing industries.

Many expedients have been proposed to correct this situation. These the author divides into two classifications: external and internal. The external methods include the equalization fee, the export debenture, the farm allotment and price equalization. A careful examination is made of each of these, and the conclusion is reached that, because of conditions inherent in the farm situation, none of these will result in the relief of the low-price and surplus conditions that at present exist.

Among the internal alleviations proposed are technical improvements in farm management and agricultural practice and adjustment of market supply to effective demand. The first group aims at increasing the gross income, lowering the cost of operation, and reducing the fixed charges of the farm. Their adoption entails a shift to net profit rather than volume as the end sought in farming. The second group aims at the adjustment of supply to demand by controlled breeding of hogs, contraction of acreage planted to corn and small feed grains, and expansion of grass land.

From the study of internal farm-relief methods, the conclusion is reached that these hold by far the greatest promise for better conditions in the corn belt and also in all American food-raising activities. It is also indicated that these improvements are already under way and that what is needed is concerted effort toward their full fruition.

The work is a scholarly study, fully documented and supported with the necessary tabular material. It is one that cannot be neglected by those whose interests are tied up with the health of agriculture and the basic food industries of the United States.—G. L. MONTGOMERY.

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MEMORANDUM ON TRADE AND BALANCES OF PAYMENTS. Published by the League of Nations, Geneva, Switzerland. Available in the United States through World Peace Foundation, 40 Mount Vernon St., Boston, Mass. In three volumes, 7½x9¾; paper.

Vol. I, Review of World Trade, 68 pp., price, $0.60, is a survey of world trade in 1930 plus preliminary information regarding the first half of 1931. Trade figures for both volume and price by continental groups, individual countries and commodities are presented. In English.

Vol. II, Balances of Payment, 1930, and an analysis of Capital Movements in 1931; 183 pp.; price, $1.50. Deals largely with balances of payment and international financing by countries. In English.

Vol. III, International Trade Statistics, 369 pp.; price, $2.50. In this volume are included statistics of world trade for 1930 together with provisional summary figures for 1931; this is a supplement to Vol. II. Although primarily compiled in the interest of statesmen and the peaceful purposes of the League of Nations, the data presented

are sufficiently detailed on the side of food commodities to make the volume one of value to commercial enterprises interested in international trade in foods. In English and French.

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STATISTICAL YEAR BOOK OF THE LEAGUE OF NATIONS, 1931-32. Published by the League of Nations, Geneva, Switzerland, 1932. Available in the United States through World Peace Foundation, 40 Mount Vernon St., Boston, Mass. 342 pp., 7½x9⅝; cloth. Price, $3.

THIS compilation, printed in both French and English, gives world statistics of territory and population, vital statistics, employment and unemployment data, production and consumption of principal agricultural commodities, and stock breeding, as well as mineral and industrial products. Included also are data on commerce and transport, public finance, currency statistics and prices.

All data are given in metric units, but tables of metric equivalents and monetary conversion factors enable the reader to translate the statistics into familiar terms.

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REVIEW OF WORLD PRODUCTION, 1925-1931. Published by the League of Nations, Geneva, Switzerland, 1932. Available in the United States through World Peace Foundation, 40 Mount Vernon St., Boston, Mass. 164 pp., 8⅛x10⅝; paper. Price, $1.25.

THE general scope of this report of the League of Nations is essentially the same as the Memorandum on Production and Trade which was first published in 1927 and discontinued in 1931 to avoid confusion with the Memorandum on Trade and Balances of Payments. Devoted chiefly to production, it includes data on Crude Foodstuffs, a subject usually ignored in statistics of industrial production, yet of great importance because of its relation to human welfare.

Agricultural production was maintained at a high level during the 1925-31 period, with the result that agricultural commodities make up nearly three-fourths of the commodities upon which the general index is based. Nearly one-third of the report is devoted to statistical tables on primary production, industrial production, and price movements.

* * *

THE AGRICULTURAL CRISIS—VOL. II. Published by the Economic Committee, League of Nations, as of Nov. 20, 1931. Obtainable in the United States through World Peace Foundation, 40 Mount Vernon St., Boston, Mass. 113 pp., 8⅛x10¾; paper. Price, $0.80.

PART I of this volume contains studies of the position of agriculture in various countries not included in Vol. 1 (FOOD INDUSTRIES, November, 1931; p. 494). These countries are Canada, China, Colombia, Egypt, Portugal, Turkey and U.S.S.R.

Part II is devoted to the spread between the prices paid to the agricultural producers and the prices paid by consumers. The percentage of consumer's price received by producer varies with country and with commodity. In Austria, it ranges from 28 per cent for fruit to 69 per cent for milk; in Poland from 7.3 per cent for wheat to 76.5 per cent for milk; in the United States the farm price of food increased 51 per cent between 1914 and 1929, whereas retail prices of these foods increased 74 per cent, with grains showing the least return to the producer and dairy products the greatest. The American meat producer gets about 11 per cent better return than does the grain producer; the dairy farmer gets 22 per cent better return. Better organized cooperative marketing by the dairy farmer is an important factor in this comparison. Other countries included in this report are: Finland, Germany, Hungary, Netherlands, Norway, Roumania, Spain, and Switzerland.

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WORLD ECONOMIC SURVEY, 1931-32. Published by the League of Nations, Geneva, Switzerland, 1932. Available in the United States through World Peace Foundation, 40 Mount Vernon St., Boston, Mass. 327 pp., 6⅝x9⅝; cloth. Price, $2.50.

AUTHORIZED in September, 1929, when security prices were riding to new highs on waves of world-wide speculation, this annual world economic survey was to be a study of general business factors, which at that time were becoming uncertain and beginning to weaken. Before the survey could get under way, the depression had reached the stage where this first survey had to include not only the period during which it was actually being made but also the preceding period during which forces were set up and events took place having direct effect upon world-wide economic financial conditions.

In many respects this report is a sequel to "The Course and Phases of the World Economic Depression," submitted to the assembly by Professor Ohlin, of Stockholm University, in September, 1931 (FOOD INDUSTRIES, April, 1932; p. 143).

Of particular interest to food manufacturers are the tables in the statistical appendix giving the changes in the volume of trade by classes of commodities for the years 1913 to 1931 inclusive and the index of world production in foodstuffs and raw materials 1881-85 to 1909-13. Such survey is to be made yearly giving in popular form a description and analysis of world economic development.

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THE FREEZING, STORAGE, AND TRANSPORT OF NEW ZEALAND LAMB. Special Report No. 41. Department of Scientific and Industrial Research, Food Investigation Board. Published by His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C. 2, 1932. 178 pp., 6x9⅝; paper; illustrated. Price, 7s. 6d.

THE recent Ottawa conference has focused more attention upon the British Empire's food industries and what is being done to build up their markets.

Prior to this political phase of aiding these industries the British government, through the Department of Scientific and Industrial Research, had been carrying on numerous studies and investigations to overcome technological difficulties in handling and transporting colony-produced food products to United Kingdom markets.

One of the most recent of these studies, summarized in this report, involved the visitation of eighteen New Zealand freezing plants, of which six were studied and conditions analyzed in detail. Many technical data were obtained and reported, by following 58 lots of lambs, comprising 809 carcasses, through the whole processing and handling operations and conditions from the abattoirs in New Zealand to the wholesale markets in Great Britain.

This report is available to readers in the United States through the British Library of Information, 270 Madison Ave., New York N. Y.

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NUTRITION AND PHYSICAL FITNESS. By L. Jean Bogert. Published by W. B. Saunders Co., Philadelphia, Pa., 1932. 554 pp., 5½x8; cloth. Price, $3.

WHEN people ate primarily to satisfy their appetites, food manufacturers could afford to disregard books like this. They cannot afford to do so in these health-conscious days. In fact, the stress which food manufacturers in their own advertising have laid upon nutritional science and pseudo-science has been responible in a great degree for the ascendancy of the physiological over the epicurean aspects of eating.

Today, every new dietary textbook, particularly such a capable and all-inclusive one as this, has an intensely practical significance. For instance, Dr. Bogert points out that "the trend in the United States is undoubtedly toward a lowered consumption of meat and an increased consumption of dairy products, fruits and vegetables. This trend cannot be too strongly encouraged, both from the health standpoint and for economic reasons. Our meat consumption, though less than it was, is still far too high."

Now, totally aside from the debatable aspects of the statement, the fact remains that in our colleges, in the high schools, wherever women talk of food, standards of judgment are being created which will determine the whole future course of the food industries. "Many powerful industries have grown up," says Dr. Bogert, "which endeavor by clever advertising to keep up the consumption of sugar, but it is high time for . . . the fall of sugar consumption to set in, and if the amount consumed in this country could be cut in half, it would be a great thing for the health of the American people." Again the statement is a debatable one, but the influence upon a new generation of housewives of the dietary theories upon which it is based is indisputable.

Dr. Bogert contrasts, at another point, the present average distribution of food expenditures with that recommended by the U. S. Food Administration and other nutritional agencies. The 10 per cent now being spent on dairy products would be raised to 20 per cent; the 32 per cent now going to meats, fish and poultry would be reduced to 20 per cent. Obviously, people are not going to change their eating habits over night to some recommended standard, but equally obvious is the dietitian's important voice in future intercommodity competition in the food field.

In this discussion, of course, we have touched on but one phase of the book. There are chapters on food economics and menus, discussions of food fads, normal diets, children's diets, even reducing diets. Taken all in all, as an example of the principles food manufacturers must either capitalize or condemn now that they have helped make the public health-conscious in regard to foods, it is worth reading, and worth thinking about.—E. SCOTT PATTISON.

MEN, JOBS AND COMPANIES

INDUSTRY

CAMPBELL SOUP CO. will use eighteen national magazines to advertise the new chicken soup in which the quantity of chicken has been doubled and which is said to have an entirely new blend.

CUBAN DOMINICAN SUGAR CORP. has been reorganized, together with Sugar Estates of Oriente, Inc., and other controlled and constituent companies. Practically all of the assets have been acquired by the new company, West Indies Sugar Corp.

DAGGETT CHOCOLATE CO., Cambridge, Mass., recently acquired the F. H. Roberts Co., Boston, manufacturer of the Apollo line of chocolates. Most of the personnel of the Roberts company will be retained.

H. J. HEINZ CO., Pittsburgh, recently added two new soups to the ten varieties already sold as members of the "57" family. The new soups, mutton broth and gumbo creole, will be introduced by an extensive advertising campaign. It has been 36 years since the first Heinz soup, cream of tomato, was brought out.

KROGER GROCERY & BAKING CO., Cincinnati, has made several major organization changes. All manufacturing operations are grouped in one department under the general managership of W. L. Campbell. A meat merchandising division also has been established, with Alvin Schlinkert as general manager. Likewise, a grocery merchandising division has been created, with Gordon P. Mougey as general manager. Kroger recently appointed E. W. Baum chief of engineering and construction at its Kansas City branch.

LIBBY, MCNEILL & LIBBY, Chicago, have acquired the concession for the sale of tomato juice at the Century of Progress Exposition, which will be held in Chicago from June to November.

MAYONNAISE MANUFACTURERS' ASSOCIATION, Philadelphia, plans to develop sectional organizations in the various divisions of the United States, with each section holding its own trade practice conference. It is the intention to get all mayonnaise manufacturers active in sectional conference work.

CHAS. D. MESCHTER, INC., manufacturer of Henri products, has introduced a new mayonnaise which will be packed in 3-, 8- and 16-oz. containers to retail for 10, 19 and 35 cents, respectively. Mr. Meschter was plant manager for Richard Hellmann's firm, Long Island City, N. Y., until it was absorbed by Best Foods, Inc.

NATIONAL BISCUIT CO., New York, recently made a shift in its executive personnel. Roy E. Tomlinson, chairman of the board, was elected president, succeeding Frank C. Lowry, who became a vice-president. Frederick Beers was made vice-president in charge of production.

NATIONAL CANDY CO., INC., St. Louis, recently consolidated the P. Echert factory, Cincinnati, and the Consolidated factory, St. Louis, as another step in its program of concentrating production in larger plants. The equipment in the Cincinnati plant, together with the supplies and personnel, will be moved to St. Louis. The Echert factory will be used in the future as a distributing depot for the Cincinnati territory.

NATIONAL DAIRY PRODUCTS CO. has absorbed the H. G. Davis Cheese Co. and the Sheboygan Cheese Co., both of Plymouth, Wis., these plants being merged as the Davis Cheese Co., a subsidiary of National Dairy. Frank Rohde has been named general manager of the new company, H. G. Davis retiring.

NATIONAL OIL PRODUCTS CO., Harrison, N. J., has awarded franchises to use the Zucker process for adding natural vitamin D to milk and bread to the Sparks Dairy, Buffalo, N. Y., and to Dietzen's Bakery, which has several plants in Indiana.

NEW HAVEN DAIRY CO. has gone over to mechanical pasteurization and abandons the in-bottle methods which it has employed for the past 15 or 20 years. The entire dairy has been completely modernized. The crown seal, which has characterized the bottled milk of the New Haven Dairy for many years, is retained.

NULOMOLINE CO. OF CALIFORNIA was recently incorporated with 2,500 shares of no par stock by Donald S. Coye and H. A. Dannenbrink, Berkeley, and Burnham Enersen, San Francisco. The new company is affiliated with Nulomoline Co., New York.

REID MURDOCH & CO., Rochester, Minn., is developing an outlet for its products in the Pacific and Atlantic coast states through a radio program broadcast over 27 stations of the National Broadcasting Co. Heretofore, the company confined its broadcasts to the Middle West.

JACOB RUPPERT CORP., New York, prominent brewing concern, plans to erect a $500,000 warehouse with a storage capacity of 500,000 bbl. as soon as definite action is taken on the legalization of beer.

PERSONNEL

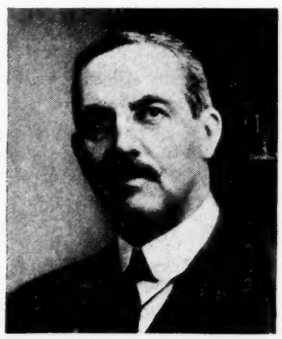
W. C. DICKMEYER, president of Wayne Candies, Inc., Fort Wayne, Ind., has been elected to the executive committee of National Confectioners' Association to fill out the unexpired term of J. A. Cox, Indianapolis, who resigned. Mr. Dickmeyer served on the executive committee from 1926 to 1929.

J. A. DUNN, formerly with Novadel Agene, Ltd., Toronto, and W. E. Broeg, who has been with Standard Brands, Inc., have joined the bakery service staff of Lever Bros., Cambridge, Mass.

WILLIAM H. ENGLISH, JR., was recently elected president of the New York Coffee & Sugar Exchange to succeed H. H. Pike, Jr. Mr. English, who is only 33 years of age, is a partner in the firm of C. D. Halsey & Co.

E. E. TAYLOR, former executive vice-president of General Foods Corp., New York, and L. R. Wasey, member of a New York advertising firm, have organized the Bahama Isles Foods Corp. The new company will manufacture and distribute food products made from el Cobo, the pink conch, found in the Bahama group of islands.

E. E. TAYLOR



FRANCIS R. HART

FRANCIS R. HART was elected president of United Fruit Co., Jan. 10, following the resignation of V. M. Cutter, who will be chairman of the board of directors of the company. Mr. Hart has served United Fruit as a director and member of the executive committee since 1901. Previous to that time he as an agricultural engineer.

JACOB HECKMAN, formerly head of the West Point (Va.) Pickle Co., is now connected with Bloch & Guggenheimer, Inc., New York pickle manufacturer.

JAMES R. HENRY recently became assistant manager of production for National Biscuit Co., with headquarters in Chicago. He has served the company at Chicago since 1904, advancing through the positions of foreman, acting superintendent, manager and general manager. Other changes in personnel made by National Biscuit include the appointment of H. L. MILLER to general manager of the Chicago bakeries; NORMAN DICK to manager of the Buffalo bakery; R. F. GREKO to regional production manager with headquarters at the Omaha bakery.

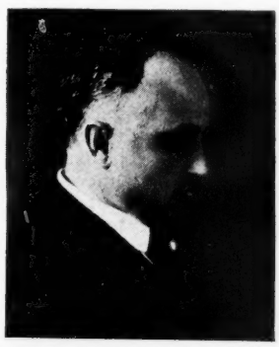
FRED KIRK, formerly chief supervisor for all stores of Loft, Inc., has been transferred to Detroit to take charge of Loft interests there. Mr. Kirk has been con-

nected with the Loft organization since 1921, starting as store manager.

ROBERT A. LEWIS, Boston, who has selected teas for Chase & Sanborn for 32 years, has been reappointed to the United States Board of Tea Experts for 1933. Other members of the board are Edward Bransten, M. J. B. Co., San Francisco; A. P. Irwin, Irwin-Harrison-Whitney, Inc., Philadelphia; F. D. Stillman, Jas. H. Forbes Tea & Coffee Co., St. Louis; J. Harvey, Swenarton, Balfour, Guthrie & Co., Ltd., New York; and John W. Vaux, Crescent Importing Co., Seattle.

W. R. OLNEY, who had been quality supervisor of the 23 factories of Snyder Packing Corp., Rochester, N. Y., since 1929, retired Jan. 1, after 42 years in the fruit and vegetable canning industry. Mr. Olney held his first important position in the industry in 1894, being plant superintendent for Fort Stanwix Canning Co.

FRED G. SCHENK has been reelected president, and his brother, Otto, chairman of the board of Columbus Packing Co., Columbus, Ohio. This company did a business in excess of $10,000,000 last year, according to the annual report.



LOUIS F. SWIFT

J. E. SELLERS is now in charge of manufacturing operations of the Walter Johnson Co., Chicago., manufacturer of confections. Mr. Sellers recently resigned as production manager for Schutter-Johnson Candy Co., Chicago.

LOUIS F. SWIFT, who has been with Swift & Co., Chicago, since its incorporation in 1885, retired as a director of the company Jan. 5. Mr. Swift was president of the company for nearly 28 years, retiring from that position early in January, 1931. No successor will be named for him, nor for Edward F. Swift, who died last May. The new board of directors will consist of nine members instead of eleven, as formerly.

DEATHS

ALBERT BAUMAN, president of Bauman Bros. Packing Co., Lancaster, Ohio, died at his home there Jan. 8, following a long illness. He was 52 years of age.

PETER F. BIEDERMANN, 61, prominent Chicago coffee roaster, died Jan. 10, after a brief illness. Twenty-five years ago he and his brothers organized the coffee roasting firm of Biedermann Bros., Inc. During his business career he was active in the affairs of the Chicago Coffee Roasters' Association, which he helped to form.

W. MARTIN BLIX, technical sales representative of Franklin Sugar Refining Co., Philadelphia, died Jan. 18. Mr. Blix was born in Stockholm 55 years ago. He came to this country in 1904 and became connected with American Sugar Refining Co. He later served Utah-Idaho Sugar Co. and Great Western Sugar Co. as a chemist.

JOHN HILBERG, SR., Cincinnati, founder of the meat packing business bearing his name, died Jan. 6 as a result of injuries received in a fall. He was 75 years old.

PHILIP LARMON, consulting general superintendent of Libby, McNeill & Libby, died in Chicago Dec. 26. Starting as a boy with Swift & Co. many years ago, he successively became architect for Swift, purchasing manager for Libby, general superintendent of manufacturing and finally consulting general superintendent in 1926. Libby's expansion of manufacturing operations during the pre-War and War years was handled to a large extent by him.

N. RAYMOND MEYER, president of H. H. Meyer Packing Co., Cincinnati, died Dec. 30 at the age of 55. He was connected with the Meyer company all his life, his father having founded it.

PHILIP LARMON

WILLIAM H. PATRICK, general superintendent of Kingan & Co., Indianapolis, Ind., died Dec. 25 from pneumonia. Mr. Patrick was born in Ireland in 1874 and came to this country about 20 years later. He went to work for Kingan & Co. in 1899 as office clerk and, except for a three-year period, remained with that company until his death.

ALEXANDER J. PORTER, who retired as chairman of Shredded Wheat Co. in April, 1930, died recently at Niagara Falls, the town in which he was born in 1863. Mr. Porter became treasurer of Natural Food Co., later known as the Shredded Wheat Co., in 1900, and eventually became president of the concern. He was made chairman when the company passed under the control of National Biscuit Co.

CHARLES B. UNDERHILL, who was president of Loft, Inc., Long Island City, N. Y., from 1917 to 1923, died Jan. 17 of heart attack. He was 59. He started with Loft as a sales manager in 1905, and left the firm ten years ago.

NORMAN WHITE, formerly editor of *Glass Container*, which is now merged with *Glass Packer*, died Dec. 25 of heart attack. His death was a result of excitement caused when whiskers he was wearing while playing Santa Claus caught fire from a cigarette.

ASSOCIATED INDUSTRIES

AUTOCAR SALES & SERVICE CO. announces the transfer of Charles E. Doling from managership of the Philadelphia branch to the Metropolitan New York area to take charge of sales contacts. Edward F. Coogan is being transferred from managership of the Boston district to take Mr. Doling's place in Philadelphia, and R. H. Gary is being moved from Ardmore to Boston to succeed Mr. Coogan.

CHERRY-BURRELL CORP., Chicago, is now offering the Vogt Instant Freezer to the ice cream industry on an outright purchase basis, dropping the former lease plan. It is felt that the machine is now sufficiently different from the form in which it is used in other industries that it may be offered for sale to the ice cream trade, although other industries may obtain it only upon lease.

EPSTEIN, REYNOLDS & HARRIS, consulting chemists and engineers, have moved into the Mallers Building, Chicago, and have installed special research facilities. The firm recently added to its staff W. M. Sternberg, Ph.D., of the University of Minnesota.

FISHER GOVERNOR CO., Marshalltown, Iowa, announces the opening of a direct factory sales and engineering office at 30 Church St., New York, N. Y. The office will be in charge of O. M. Galiher, A. W. Bailey and J. J. Belger.

GENERAL AMERICAN TANK CAR CORP. has taken over the entire refrigerator car service of Rock Island & Pacific Railroad Co. system, which covers a large part of the Southwest and far West. The car company recently acquired the refrigerator cars of Swift & Co.

GENERAL WAXED PAPERS, INC., announces its incorporation and its acquisition of the assets and business of the Kelwax division of Kellogg Paper Products. The company, with headquarters at 526 West 18th St., Chicago, Ill., will produce printed and plain waxed wrappers for bread, cakes, candy, cereals and other foodstuffs.

MERCK & CO., INC., Rahway, N. J., announces that its new research laboratory will be ready for occupancy March 1. The laboratory will house 25 research chemists and is costing over $150,000.

TAYLOR INSTRUMENT COS., Rochester, N. Y., manufacturers of indicating, recording and controlling instruments, have replaced the name "Tycos" with "Taylor" on their instruments and in their descriptive material and advertising. The company considered it advisable to use the one general trade name, rather than two, to avoid any misconception about the uniformity of Taylor products.

GEORGE E. WALLIS was recently elected president of Creamery Package Manufacturing Co., Chicago, to succeed G. F. Belknap, who resigned recently and now serves as chairman of the board. Mr. Wallis entered the employ of the company in 1916 in a sales and engineering capacity. He has served successively as a branch office manager, division sales director and general manager, being promoted to the latter position in 1930.

BUSINESS TRENDS

Certain Exports of Pork Increase in 1932

Although exports of pork products from principal ports of the United States to Europe show a decrease when the totals are compared with those of 1931, increases are shown in certain instances. The quantity of ham and shoulder bacon and pickled pork shipped to other European countries than Belgium and the United Kingdom were larger during the past year. Ham and shoulder exports to those countries increased substantially, being 723,000 lb. in 1932, as compared to 111,000 lb. the year before. The government figures also show that exports of lard to Germany and to the Netherlands increased in 1932. Germany received 154,187,000 lb., as compared to 127,505,000 lb. in 1931, and the quantity shipped to the Netherlands was 38,503,000 lb., as against 28,184,000 lb. the year before.

Less Fish in Storage

Cold-storage holdings of fish on Dec. 15 amounted to 55,749,044 lb., as compared with 62,167,966 lb. on Nov. 15 and 72,362,390 lb. on Dec. 15, last year, according to the Bureau of Fisheries.

Decrease in storage holdings, as compared with last year, occurred in Ciscoes, croakers, halibut, sea herring, steelhead, sockeye, fall and pink salmon, shellfish, whiting and miscellaneous. Increases occurred in silver salmon, mackerel, Chinook salmon and sturgeon, and spoonbill cat.

BASIS FOR THE CURVES

Retail food prices, factory employment, factory payrolls and wholesale prices are based on indexes of the Department of Labor. Cost-of-living index is that of the National Industrial Conference Board. Electrical power consumption figures are furnished by *Electrical World*.

Mounting Temperatures Lower Food Prices

Springlike weather conditions are not conducive to heavy consumption of food. Instead, they favor an increase in food supply. Net result: between Dec. 17 and Jan. 14, wholesale food prices, as reported by U. S. Department of Labor, declined 1.02 per cent. A weighted index shows the decline to be 11.49 per cent between Dec. 17 and Jan. 21, with butter, eggs and meat, except veal, heading the decline. All food prices, except for grain, indicate a weakening market as long as mild temperatures predominate. Lack of moisture and poor crop outlook in grain-growing regions are largely responsible for the increase in grain prices; 1.11 per cent for month ending Jan. 14, as reported by U. S. Department of Labor, and 4.44 per cent as given in weighted index for month ending Jan. 21. Due to influence of food prices, general index of commodity prices has tended downward.

Cold weather and holiday buying increased A. & P. tonnage sales during month of December by 26.17 per cent over November. However, December, 1932, sales volume was 3.43 per cent below that for December, 1931.

The annual new year spurt in business activity is indicated by a rise in *The Business Week* index of business activity from 52.4 per cent of normal for week ending Dec. 17 to 54.6 per cent for week ending Jan. 14.

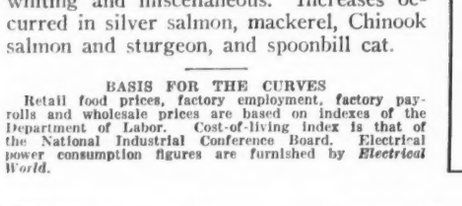
Foreign Fish-Freezing Industries Expand

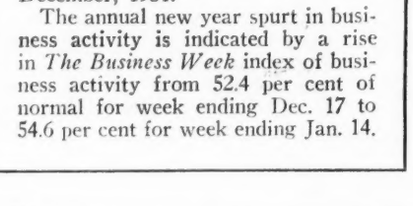
Rapid progress is being made in fish-freezing industries in countries competing with the United States for world trade. In Canada, the Quebec provincial government has arranged to establish two modern brine-freezing fish plants on the Gaspe Coast, Gulf of St. Lawrence, and these are expected to be in operation before the end of the year. This development will afford the important fishing industry of that section the advantages of the new quick-freezing process for marketing its salmon and other fish products. The two plants, the first on the Quebec coast, will cost about $100,000 and will have two separate systems, one for filets and the other for whole fish. Scallops also will be frozen.

The fish-freezing industry in France has made serious advancement in the last six months. One company has completed an installation at Toulon and is now making plans for a plant at Marseilles.

Seek State Regulation

If activities in the dairy industry of New York State continue along present lines, the legal standing of the industry may become, in effect, that of a public utility. Convinced that there has been "too much crying over spilled milk" and too little done about it, the Northern New York Federation of Chambers of Commerce and the North County Milk Producers' Committee have been discussing plans for effecting state-wide regulation of prices. It was decided on Jan. 21 to take the problem up with the state executive, and business men and dairy repre-


RETAIL FOOD PRICES, COST OF LIVING
Retail Food Prices (1913=100)
Cost of Living (1923=100)
Cost of living
Retail food prices
1926 1927 1928 1929 1930 1931
J F M A M J J A S O N D J F M A M J J A S O N D
1932
1933


FACTORY EMPLOYMENT (1926=100)
Food industries
All manufacturing industries
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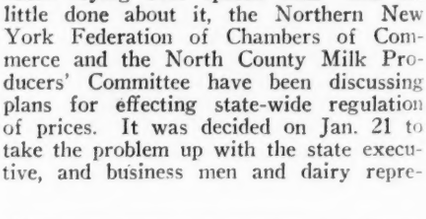
FACTORY PAYROLLS (1926=100)
Food industries
All manufacturing industries
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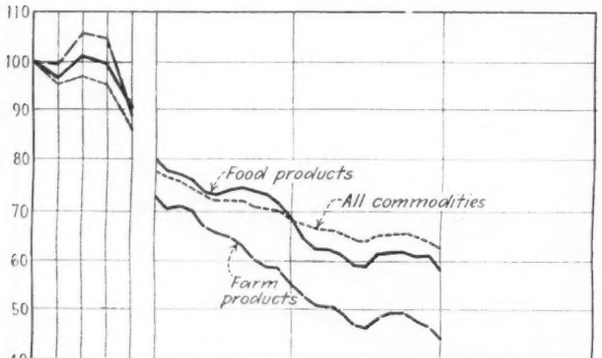
Food products
All commodities
Farm products
WHOLESALE PRICES (1926=100)
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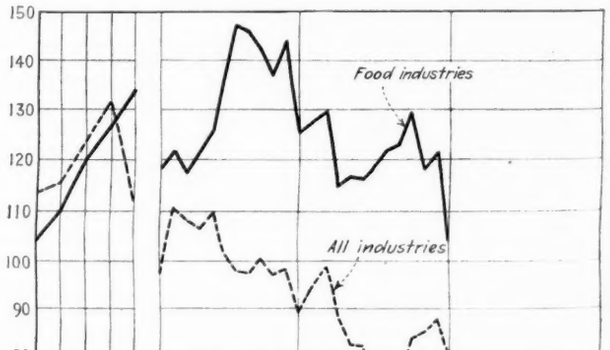
Food industries
All industries
ELECTRIC POWER CONSUMPTION (1923-25=100)
1926 1927 1928 1929 1930
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1931
1932
1933

sentatives will meet with Governor Lehman soon to learn his attitude toward a state authority for milk prices.

A bill designed to aid the New York daily industry was introduced in the state Legislature last month. It provides that the state take over close supervision of the industry, licensing dealers and keeping close watch over agreements among retailers, wholesalers and producers to guarantee the producer half the retail price.

Dairies in South Africa Continue Expansion

Union of South Africa has reversed its position in the world dairy market within the last few years and is now exporting butter and cheese in increasing quantities. In 1928, only 215,488 lb. of butter and 87,920 lb. of cheese was exported, while the imports of these products totaled 3,921,120 lb. and 734,608 lb., respectively. In 1931, however, South African butter exports amounted to 4,215,232 lb., as against imports of 1,244,096 lb.; and cheese exports totaled 1,921,696 lb., as compared with 288,624 lb. of imports.

This expansion continued during 1932, the exports from January to June being 2,685,984 lb. of butter and 994,000 lb. of cheese, and the imports 528,864 lb. and 98,672 lb., respectively.

New Industry for Halifax

An entirely new industry is proposed for Halifax. It involves the importing, cleaning, processing and packing of British Empire dried fruits from Australia, India and other countries. These activities will be carried on by W. H. Schwartz & Sons, coffee and spice manufacturers of Halifax, who plan the purchase of the $25,000 Nova Scotia Cold Storage Building and the installation of the necessary equipment. The decision to establish the new industry is stated to be a result of the inauguration of steamship services from Australia to Halifax.

Salmon to Be Plentiful

Enough Alaska salmon will be available this year to provide a large catch, and the 1933 pack will depend upon the efforts of canners, according to the Alaska division of the Commerce Department Bureau of Fisheries. The pack in 1932, somewhat over 5,000,000 cases of 48 one-pound cans each, was larger than the average and was put up by a smaller number of operating firms than were in the field the preceding year.

More English Canneries

Domestic fish canneries apparently will have more British competition in the near future, since National Canning Co., Ltd., England, is planning the establishment of a chain of fish canning factories on the coasts of Great Britain. These factories will handle the supply of fish from all important fishing points along the east and south coasts, it is reported. One factory, at Dundee, Scotland, is now being equipped.

Prior to this move, National Canning Co. had confined its activities to fruits and vegetables, having six plants located throughout England.

More Graded Vegetables And Fruits Used

Canners used an increased quantity of graded vegetables and fruits during the past year, acording to the Department of Agriculture. Approximately 275,000 tons, principally tomatoes, were inspected on the basis of the United States grades. Apples, spinach, red sour cherries, pears and juice grapes also were graded. The work was done in cooperation with various states at about 250 canning plants or receiving stations. This increased demand for graded products has led the Department of Agriculture to make a study of grades for sweet corn for canning, that work being done at present.

The use of grades yields better prices to producers, encourages the growing of better quality food and enables canners to effect economies, the department says.

South Feeding Itself

The South is beginning to feed itself, as was predicted in November, 1931, in Food Industries (p. 467). Home canning went ahead in 1932 in Texas, according to O. B. Martin, director of extension service, Texas A. & M. College, to the extent of an estimated 100,000,000 containers—the equivalent of 43 containers per capita of population.

"Sell the farm home market first" is the first point in the eight-point live-at-home Texas farm policy. This market is calculated to be twice the size of the 1932 Texas cotton crop at 10 cents per pound.

Rise of Packaged Pickles

Packaging of pickles has completely changed in the past ten years in the experience of a large pickle manufacturer. In ordering supplies in the earlier days it was customary to plan for 90 per cent of shipments in bulk—i.e., 16- or 45-gal. wooden barrels. Today the bulk sales account for only 10 per cent, while 90 per cent of total sales are in glass containers.

Production of Solid CO_2

Production of solid carbon dioxide in 1931 amounted to 84,974,018 lb. with a value of $2,899,738, according to an announcement of the Bureau of the Census. The total production of carbon dioxide gas was 178,570,183 lb., of which 26,896,186 lb. was made and consumed in the same establishments for the manufacture of solid CO_2. Of the remaining 151,673,997 lb., approximately 72,000,000 lb. was sold as liquid CO_2 for use as such. Approximately 80,000,000 lb. was piped direct to plants making solid CO_2, giving a total consumption for this purpose of approximately 107,000,000 lb. with an indicated average yield of 79.4 per cent.

Home Canning Operations

(A Correction)

George W. Cobb, Jr., of the research department of American Can Co., calls attention to an error in arithmetic occurring in the item on page 32 of January Food Industries.

On the basis of 2,088,000,000 rubber rings sold, figuring 48,000 jars to a carload, the indicated 1932 production of home-canned foods would be equivalent to 43,500 carloads, not the huge amount stated. Home production, therefore, probably is somewhat less than 25 per cent as large as industrial production.

Indicators

Now that Towle Bros. have announced plans to reenter the syrup business in Minneapolis and St. Paul, we wonder if the coming years will see new manufacturers of baking powder, tapioca, gelatin desserts and coffee come into the field from those who sold out four or five years ago?

Kroger Grocery & Baking Co. has taken a significant step in the direction of giving the housewife what she wants by the establishment of a Homemakers' Reference Committee composed of homemakers selected from various towns and cities in which the company operates.

New York State grows about 25,000 acres of sweet corn for canning factories in normal times; about 11,000 acres was grown in 1932.

Competition for orange growers in California and Florida is forecast by a shipment of oranges recently brought to Halifax from Palestine. The shipment, it is stated, is the first of a series of weekly consignments which will reach Canadian Atlantic ports to be marketed in Eastern and Central Canada.

Present low prices for hogs is causing many farmers to hold their feeders longer than usual in the hope of profiting by a turn in the market. This practice increases the yield of lard per hog and intensifies overproduction. But it does not explain the current diminished quality of lighter weight animals now reported at large markets.

Confectionery sales in the United States dropped 21.3 per cent for the first eleven months of 1932. Manufacturing wholesalers sold 23.8 per cent less; manufacturing retailers, 5.0 per cent less; and manufacturers of chocolate products, 14.3 per cent less.

Clover Farm Stores has inaugurated a correspondence course to acquaint its retail members and their clerks with the principles, methods and history of the organization.

To promote consumption of lard in Iowa, a booklet describing its food value and pointing out that it is easily digested and is economical has been issued by Iowa State College of Agriculture and Mechanic Arts, Ames.

"There has been no noticeable shift from package to bulk goods during the depression," according to a personal survey of 200 grocers in three states in the St. Louis area made by Associated Cooperage Industries of America and published in *The Wooden Barrel*, December, 1932. The summary of votes on this question was 198 *No* to 2 *Yes*.

Union of South Africa is taking a slice of the British market for chilled beef. Regular monthly shipments to England are scheduled for this year. South African quarters of beef have sold recently in London for about one cent less than comparable Argentine grades.

THIS MONTH—

FEBRUARY

6-10—National Malt Products Manufacturers' Association, annual meeting, Chicago, Ill. S. L. Goldman, secretary, 160 North La Salle St., Chicago, Ill.

7—Dairy and Ice Cream Machinery and Supplies Association, Fourteenth Annual Meeting, Hotel Pennsylvania, New York, N. Y.

12—National Cheese Producers' Federation, annual meeting, Curtiss Hotel, Plymouth, Wis. R. B. Melvin, secretary, Plymouth, Wis.

20-March 4—Package Exhibition, National Alliance of Art and Industry, 65 East 56th St., New York, N. Y.

27-March 4—Fourteenth Exposition of Chemical Industries, biannual, Grand Central Palace, New York, N. Y.

Hors d'Oeuvres

A CAN of that rattlesnake delicacy from Florida recently caused much apprehension among cautious delivery supervisors at the New York Post Office. It was consigned to us, but we were unable to obtain it until we had convinced the third assistant supervisor and his superiors that the product was not a venomous reptile but was harmless and, in fact, was quite dead. When we finally saw the package, we understood. The can was packed in a wooden case that bore the label "Contains Rattlesnake."

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PARIS reports that New York's former playboy mayor, James J. Walker, has been offered the position of "czar" of French liquor exports to the United States. New Yorkers will tell you that Mr. Walker is well qualified for the job. We wonder if the French exporters plan to guarantee a wisecrack with every bottle.

•

OYSTERS of a dark hue have practically ruined the fishing industry at West Sayville, L. I. Ever since the first diggings in October, the bivalves taken from that localitiy have had discolored gills. And while they have officially been pronounced fit for human consumption, lovers of sea foods will have no part of them. Why people that tolerate sand in their diet should object to variations in color is what the Technocrats would call an indeterminant.

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THE LATEST in dispensers is a nickel-in-the-slot machine that fills steins with that amber fluid so widely discussed recently in legislative circles. Not only does the beverage automat discharge the correct measure without spilling a drop, but it regulates the "head" so that it is just right. The machine may be O.K., but the inventor certainly has no respect for tradition.

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THE GOVERNMENT reports that it costs 42 cents a day to feed a sailor but only 31 cents to provide the soldier with his mess. Maybe it costs more to buy food of a kind that will stay put on a rolling battleship.

What Food Men

Canners Discuss Economics—Secretary Chain Wins Decision—Model Ice Held—Quality Survey Made

CANNERS of the country last year expressed a real interest in the economics of their business, and as a result the industry, in 1932, invited the Bureau of Agricultural Economics to study the price movements. This culminated in a series of addresses by Carlos E. Campbell, of the bureau, at the convention of the National Canners' Association in Chicago, Jan. 23-27.

Studies on forecasting price movements on corn, peas, tomatoes and spinach, briefly reported elsewhere in this issue, were placed before the members. Interpretations by far-sighted leaders of the industry supplemented Mr. Campbell's remarks, but it was apparent that many average listeners failed to comprehend what it was all about. Some even expressed a belief that the discussion would afford unscrupulous buyers a means of beating down the market.

The convention was held without the usual machinery exhibit. Attendance records were not kept, but it was evident that fewer were present than in 1932.

STANDARDS for all varieties of food products can be established by the Secretary of Agriculture if a bill introduced by Senator Copeland is passed. This measure provides that standards promulgated by the Secretary of Agriculture and subsequently approved by an advisory committee and at a public hearing will be given the force of law. And only products that meet such standards will be entitled to bear an unqualified label. The Copeland bill projects the theory of the McNary-Mapes Act on a much broader scale.

The new measure provides additional administrative flexibility in pure-food regulation both because the Secretary's standards have the force of law and because the standards may be changed from time to time if it is desirable. Except for those covering canned foods and butter, standards promulgated by the Food and Drugs Administration are now only advisory. The bill covers all manufactured foods except proprietary foods.

It is held likely that the next Congress will give this measure serious consideration. The bill has wide support in the food industry, according to Dr. Dunbar, of the Food and Drugs Administration, and it has the official indorsement of the Department of Agriculture.

RAILROADS having refused them a blanket reduction in freight rates, Florida citrous fruit growers are shipping a large portion of this season's crop into northern markets by steamship and truck. The through rates over the new water-truck routes are sufficiently low to assure a return to the producers and at the same time avoid disrupting markets by providing for wide distribution as far as 200 miles inland from Baltimore, Philadelphia, New York and Boston.

Inflexible rail freight charges had become such a large proportion of the price obtainable in northern markets that, according to the growers' sad story, there wasn't enough left to pay their out-of-pocket cost for picking and packing. Last season the railroads sought to compromise by reducing rates to North Atlantic port cities 18 to 20 per cent, which is also about 20 cents on a box. The desire of the shippers individually to cash in on the lower rates, coupled with the railroads' stipulation that cars must be loaded to 44,400 lb. instead of 32,400 lb., overloaded the port markets. The rate reductions were swallowed by tobogganning prices, and the growers were worse off than ever.

As It Looks to Us

TECHNOCRACY'S recent collapse leaves us all cold and weepy.

KILL the Jones Bill! The more that the allotment plan is studied the worse it appears. Production control cannot be won by bribery!

READERS are urged to keep a diary, the idea being to provide themselves with interesting reading toward the close of the next depression, along about 1944 or 1945. What are the landmarks that indicate a turn for the better? Past experience may help, but it usually is something wholly unexpected, unrecognized and misunderstood that is the real signal.

STUDY charts and drawings in this issue to see how ridiculous men have been to increase production in the face of declining prices. A depression seems to be a time when an unusually large portion of the public does the wrong thing.

STATISTICS are needed today more than ever. The only reason we cannot get them earlier and more completely is failure of people and industry to cooperate.

THIS is a forecast issue, but we cleverly dodge a forecast of the return of prosperity. We are not pessimistic; merely conservative. Whichever way business ultimately turns will be by a zigzag trail.

Are Doing and Saying

May Set Standards—Drop Railroads—Cream Law—Mayonnaise Meeting—Ask Lower Freight Rates

CHAIN STORES won an important legal decision in their battle against discriminatory taxation Dec. 27, when the Circuit Court of Wayne County, Michigan, denied the right of a municipal corporation to collect taxes under such an ordinance. The decision was handed down in a suit brought by Kroger Grocery & Baking Co. against Hamtramck, Mich., when the city attempted to impose a graduated tax on chain stores.

In giving his decision, Judge Theodore J. Richter said: "There can be little doubt of the unconstitutionality of the ordinance itself. Whatever may be the rights of cities to regulate food stores, they cannot, under the guise of regulation or taxation, enact an ordinance calling for the payment of different amounts for the same privilege —that of operating one store—just because one, two, three or four stores may be operated in addition to that one. This is an arbitrary, unjust and illegal classification."

AS A STEP in the direction of a national standard for ice cream, the International Association of Ice Cream Manufacturers has developed a model ice cream law and is submitting it to members for approval. It is hoped that this move will bring about a uniformity in state laws that will ultimately make it possible to secure a national standard.

The suggested law provides for not less than 10 per cent butter fat in vanilla ice cream and not less than 8 per cent butter fat in fruited and nut ice creams. It calls for a minimum of 1.6 lb. of total solids per gallon, which allows 100 per cent overrun on ice cream of 35 per cent total solids. Definitions for ice cream, frozen custard, ice milk, milk sherbet and ice or ice sherbet have been included in the standard. The manufacturer of imitation ice cream is prohibited. However, ice milk includes the product ordinarily considered imitation ice cream, this provision being included to make the law constitutional.

The definitions of milk sherbet and ice or ice sherbet establish a minimum acidity content to stop the manufacture of so-called vanilla or chocolate sherbets, which, in reality, are imitation ice creams. The provisions for frozen custard set up a standard requiring not less than 10 per cent of butter fat and not less than a definite quantity of egg yolk.

To provide for proper enforcement, the proposed standards require every wholesale and retail manufacturer to take out a license. As a check on bootlegging, provisions are included to prevent misbranding either as to composition or origin. The law stipulates that it is unlawful to use any cabinet, container or other equipment owned by any other person without the written consent of the owner. It also contains provisions for sanitation and states that all milk and milk products used in the manufacture of frozen desserts shall be pasteurized.

MAYONNAISE Manufacturers' Association took steps to expand its markets at the meeting held in Chicago Jan. 20-21. In addition to getting important pointers on distribution from speakers such as Paul S. Willis, president of A.G.M.A., the association adopted a plan for an educational and publicity campaign. This campaign will be under the direction of Mary Griffin, the organization's director of home economics, and will educate the public to the fact that mayonnaise is a healthful and nutritious food.

REPUTATION must mean something. Anyway, the Trade Commission finds that canned vegetables and fruits produced by manufacturers who advertise nationally are superior in quality to those of their more local competitors. This conclusion was reached by an investigation of samples purchased in stores in Detroit, Des Moines and Memphis. It is included in the Commission's report "Comparative Quality of Manufacturers', Chains' and Other Distributors' Brands of Canned Vegetables and Fruits."

The report also stated that the grades of chains compare favorably with those of nationally advertising manufacturers. Furthermore, it showed that the chains are about on a par with these and other distributors in the quality of their private brands of canned vegetables and canned fruits.

MANUFACTURERS of articles packed in glass may use their discretion as to how these shall be protected as a result of a revision recently made by the Freight Classification Committee with reference to shipments in glass. The new ruling made by the committee reads as follows:

"Glassware or other fragile articles, or articles in glass or earthenware, packed in fiber boxes, must not exceed 65 lb. gross weight. Contents must be packed within the container by or with liners, partitions, wrappers, excelsior, straw or other packing material that will afford adequate protection against breakage or damage, and so that the contents will completely fill the box."

PACIFIC COAST fruit and vegetable packers and growers see no reason why they should pay a transcontinental freight rate of 90 cents when pineapple packers are shipping cross-country on a 73-cent rate. So on Jan. 5, a committee presented at a meeting of vice-presidents in charge of traffic for the Western Pacific, Santa Fe and Southern Pacific Lines, a request for a transcontinental rate that is in harmony with the rate that has been accorded to pineapple shippers.

CANNED SALMON produced in Canada must be designated by variety after April 1, when a recent order-in-council passed by the Dominion becomes effective. The following designations will be inscribed on both ends of the cans: "S" for sockeyes, "P" for pinks, "C" for cohoes, "K" for chums, "T" for springs, "B" for bluejacks and "H" for steelhead.

This system of marking has been introduced to prevent the salmon from being

—AND THE NEXT

MARCH

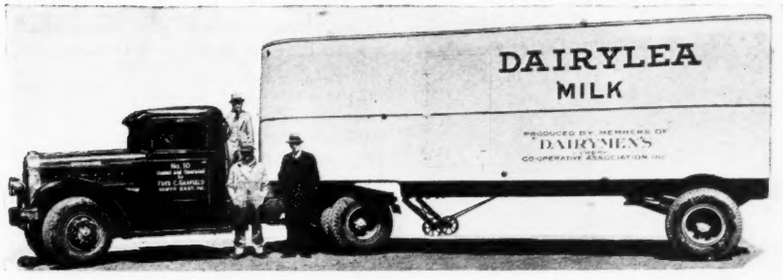
7-10—American Management Association, Third Annual Packaging Exposition and Consumers' Marketing and Packaging Conferences, Hotel Pennsylvania, New York, N. Y. Kenneth B. Andersen, Secretary, 20 Vesey St., New York, N. Y.

13-16—American Society of Bakery Engineers, Edgewater Beach Hotel, Chicago, Ill. Victor E. Marx, Secretary, 1541 Birchwood Ave., Chicago.

14-16—Texas and Southwestern Cattle Raisers' Association, Fort Worth, Texas. E. B. Speller, Secretary, Coliseum Bldg., Fort Worth.

26-31—American Chemical Society, Eighty-fifth Meeting, Willard Hotel, Washington, D. C.

This tractor-trailer combination, used by Fred C. Garfield, North East, Pa., in his dairy business, is somewhat of an innovation in commercial haulage units. The trailer is refrigerated and it hauls 225 cans of cream over a 400-mile route seven days a week, regardless of weather.



An exemplification of good taste—in more ways than one. The instrument also has good taste, being able to indicate the ripeness of fruits, vegetables and beverages. When its two dissimilar metallic pins are inserted into the product, an electrolytis action is set up, giving a reading proportional to the acidity. This Electrynx, developed by Westinghouse, forecasts hard times for professional tasters.

sold outside of the Dominion under false or misleading labels. Salmon for domestic markets is labeled as to species, but that exported is ordinarily labeled in the country where it is consumed.

Hold Educational Meetings

Two agricultural schools will be active this month in fields of interest to food manufacturers. Purdue University, Lafayette, Ind., will conduct a Conference of Indiana Canners and Fieldmen Feb. 14-15. Problems dealing with engineering, canned food grades and yield and cost of canned products as affected by grade will be among the subjects discussed.

State College of Washington, Pullman, Wash., will hold an Institute of Dairying Feb. 13-18, during which it will conduct a national scoring contest for creamery butter, vanilla, ice cream, creamed cottage cheese and cheddar cheese. Entries for this contest must be in by Feb. 10.

Employees Grow Food

New competition for the food manufacturer is springing up in the form of industrial gardening. Outstanding among these enterprises is that of B. F. Goodrich Co., Akron, Ohio, which has financed a gardening program for its present and former employees. Believed to be the largest project of its kind in the country, the Goodrich garden has engaged nearly 1,000 men in planting, cultivating and harvesting the crops since it was started last spring. This garden is operated on a mass cultivation system, and during the past season it produced more than 500 tons of food products on its 275 acres.

Department of Agriculture Develops New Processes

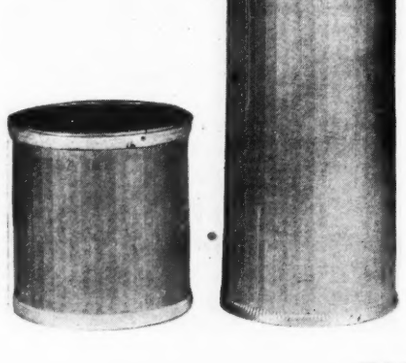
By a process recently developed in the Department of Agriculture, milk sugar can be removed from skim milk without affecting the casein. This process is particularly valuable to the ice cream industry. It enables ice cream makers to increase the quantity of milk solids, not fat, in ice cream by about 20 per cent without any risk of "sandiness." Milk solids thus added to ice cream improve both its quality and nutritive value.

The department also developed a process by which milk may be held frozen as long as three weeks and restored to its normal state without loss of flavor or of physical properties. It has devised equipment for separating albumen from cheese whey without impairing its physical properties. Added to cows' milk, this byproduct gives it the approximate composition and properties of human milk. Another process developed in the department permits American or cheddar cheese to be ripened in cans without molding or swelling. It permits the marketing of the natural cheese in an attractive package and eliminates waste due to loss of moisture and the formation of a rind.

Paper Ice Cream Can Adopted by Borden

It seems that the paper ice cream container is coming into its own. At least it is in metropolitan New York, where the ice cream subsidiaries of Borden Co. have adopted it 100 per cent. The container used by these companies is constructed with straight sides and the bottom is held in place by a crimped metal rim, the corrugations in which prevent the container from freezing to the bottom of the dealer's cabinet. The cover comprises a straight metal rim with a cardboard insert, which the dealers break along perforated lines in opening the container. A smooth, compact, built-in liner provides for sanitation.

In addition to its sanitary features, the container effects considerable economy. It will permit the company to use 1½-ton trucks instead of the 2½-ton trucks now in service. Then, too, the paper container holds refrigeration well, eliminates picking up of empties, and obviates can-washing equipment. However, about 2 hours more is required for hardening than with metal containers.



The new "Epicure" all-India blend of tea sponsored by Jaburg Bros., New York, is put up in a package that befits the dignity of the aristocratic beverage. The design catches the eye and connotes quality.

Concentrates

The Tariff Commission will hold a public hearing on differences in cost of production of sugar and molasses and related products in Washington, Feb. 14. . . . California hop growers are organizing and expect to bring 75 per cent of the total acreage into the membership . . . German engineers propose to freeze foodstuffs faster than is possible with present systems by bringing the food in contact with a vaporizing refrigerant such as liquid CO_2 or methyl ether . . . Calcutta scientists recently produced the antineuritic vitamin B by irradiating adenine sulphate . . . Mayonnoise Manufacturers' Association finds that 415 manufacturers are producing mayonnaise and salad dressings . . . In New York State, drug stores, restaurants and hotels that make frozen desserts must submit an annual report to the Commissioner of Agriculture describing conditions of sanitation . . . To develop outlets for fruits peculiar to the Orient, a fruit research center has been provided for in India . . . Palestine grapefruit is competing with the American product in France; its flavor appeals to the French and the price is lower . . . Denmark imported 287,000 boxes and 78,000 bbl. of American apples in the crop year ending June 30, 1932, as compared with 118,000 boxes and 59,000 bbl. in the preceding year . . . The German worker eats, on the average, 24 bu. of potatoes a year; the American worker eats about 3 bu. . . . Per capita consumption of sugar in the United States has increased by more than 900 per cent in the last century and more than 100 per cent in the last 50 years, according to Lamborn's statistics. The consumption for 1932 was 101.75 lb. per person, 3.93 per cent below that for 1931 . . . Shipments of raw sugar from Cuba to the United States in 1932 were the lowest in 20 years, being 1,702,000 long tons—18.4 per cent less than in 1931. . . . Colombian coffee exports totaled 3,139,504 bags in 1932, a million more than in 1923.

PATENT DIGEST

Baking and Milling

Sectioned Baking Pan for Making Individual Portions of Pie—David Trumpeter, Baldwin, N. Y., to Tri Pie Corp., Brooklyn, N. Y. No. 1,888,562. Nov. 22, 1932

Starch Separated From Corn Gluten Mixture With Aid of Phenol—Henry Berlin, New York, N Y., to International Patent Development Co., Wilmington, Del. No. 1,888,575. Nov. 22, 1932.

Puffed Cereal Foods Prepared From Wheat Flours Containing Rice Starch — Robert W. Scanlon to Ralston Purina Co., St. Louis, Mo. No. 1,890,697. Dec. 13, 1932.

A Controlled Continuous Addition—Continuous Withdrawal Process of Propagating Yeast—Soren Sak, Charlottenlund, Denmark. No. 1,891,841. Dec. 20, 1932.

Cereals Subjected to High Pressure and Then to Varying Degrees of Vacuum to Disrupt Cells of Grains and Stimulate Enzyme Activity — Efraim Rabinowitsch, one-half to Eugen Rivoche, Paris, France. No. 1,892,076. Dec. 27, 1932.

Beverages

Coffee Subjected to Burning Flame for a Few Moments at End of Roasting—Daniel Joseph Kennedy, Vancouver, B. C., Canada. No. 1,887,686. Nov. 15, 1932.

Coffee Roasted During Continuous Passage Through Series of Superimposed Cylinders—James M. Edwards, Chicago, Ill. No. 1,890,642. Dec. 13, 1932.

Step-by-Step Aqueous Extraction of Coffee at Temperatures Between 30 and 50 Deg. C. — William W. Giffen, Pittsburgh, Pa., and Clinton W. Carter, Mt. Lebanon, Pa., to International Liquid Coffee Co., Pittsburgh, Pa. No. 1,891,383. Dec. 20, 1932.

Confectionery and Sugar Products

Invert Sugar Prepared From Raw Cane Sugar Instead of From Refined Sugar —Eugene N. Ehrhart, New Orleans, La., and Leonard Wickenden, Manhasset, N. Y., to John J. Naugle, Greenwich, Conn. No. 1,886,875. Nov. 8, 1932.

Cane Juice Desiccated by Treatment With Soluble Aluminate Followed by Addition of Lime — Truman B. Wayne, Houston, Texas, to National Aluminate Corp., Chicago, Ill. No. 1,887,879. Nov. 15, 1932.

Soluble Sweetened Cocoa Products Formed by Heating Cocoa Powder Suspended in Acid, Sugar-Containing Liquid Under Pressure — Hans-Adalbert Schweigart, Koditz, near Saalfeld-Saal, Germany. No. 1,887,905. Nov. 15, 1932.

Invert Sugar Used in Treatment of Tobacco Leaves—Stroud Jordan, Brooklyn, N. Y., to Applied Sugar Laboratories, Inc., New York, N. Y. No. 1,888,173. Nov. 15, 1932

Dairy and Egg Products

Ice Cream Mix Packaged and Frozen in Cone Shape for Individual Service—Harry MacElhone to MacElhone Methods, Inc., Binghamton, N. Y. No. 1,888,178. Nov. 15, 1932.

Eggs Charged With Carbon Dioxide Gas Following Subjection to Vacuum in Mineral Oil Bath — Theodore L. Swenson, Bethesda, Md., to free use of the public. No. 1,888,415. Nov. 22, 1932.

Cheese Sterilized With the Addition of a Soluble Salt of Gluconic Acid—Richard Pasternack and Richard W. Burnham to Charles Pfizer & Co., Brooklyn, N. Y. No. 1,890,948. Dec. 13, 1932.

Bulk Ice Cream Stamped Into Novelty Shapes and Designs in a Continuous and Mechanical Manner—Millard G. Harnden, Seattle, Wash. No. 1,891,230. Dec. 20, 1932.

Fruits and Vegetables

Fruits and Vegetables Tested and Measured for Hardness and Toughness by Electrically Controlled Device—Victor B. Bonney and Paul A. Clifford, Washington, D. C., to government and people of the United States of America. No. 1,887,850. Nov. 15, 1932.

Juice Extracted From Citrus Fruits by Reamer Type Machine With Cutter—Norval M. Faulds, Clearwater, Fla. Nos. 1,888,528 and 1,888,529. Nov. 22, 1932.

Pimientos Preserved in Bulk by Heating in Presence of Acetic Acid and Salt—John H. Jones, Bound Brook, N. J., to Best Foods, Inc., New York, N. Y. No. 1,889,123. Nov 29, 1932.

Fruits, Vegetables and Similar Foods Processed Under Varying Degrees of Vacuum to Be Thoroughly Impregnated With Treating Liquid—Ulysses G. Todd to Pfaudler Co., Rochester, N. Y. No. 1,890,475. Dec. 13, 1932.

Miscellaneous Products and Processes

Transparent Lacquer Prevents White Deposit on Glass Container by Shelled Nuts—Daniel M. Gray to Hazel-Atlas Glass Co., Wheeling, W. Va. No. 1,883,366. Oct. 18, 1932.

Mayonnaise Stabilized by Treating Mustard Flour With Vinegar and Heat Prior to Use in Mayonnaise—Daniel M. Gray to Hazel-Atlas Glass Co., Wheeling, W. Va. No. 1,883,367. Oct. 18, 1932.

Foods Frozen by Evaporating Surplus Moisture Under High Vacuum—Douglas K. Warner, Watkins Glen, N. Y. No. 1,884,429. Oct. 25, 1932.

Nutmeats Blanched by Dipping in Hot Alkali Solution Followed by Treatment With Dilute Acid—Carey K. Bizzell, Elizabeth, N. J., and James Eustace Bizzell, Brooklyn, N. Y. No. 1,887,256. Nov. 8, 1932.

Vitamin B Concentrates Prepared From Crude Vitamin B Extracts by Treatment With Glacial Acetic Acid and Acetone — Barnett Sure, Fayetteville, Ark. No. 1,889,427. Nov. 29, 1932.

Peanut Butter Consisting of Ground Roasted Peanuts, Strained Honey and Oil of Green Peanuts—Frederick H. Hoffman, Columbus, Ohio. No. 1,890,180. Dec. 6, 1932.

Fats and Oils Stabilized Against Rancidity Through Treatment Including the Addition of 5 to 10 Per Cent Palm Oil Rich in Carotinoid Pigment—Roy C. Newton and William D. Richardson to Swift & Co., Chicago, Ill. No. 1,890,585. Dec. 13, 1932.

Glutamic Acid Prepared by Hydrolyzing Gluten in Presence of Nitric Acid and Manganese Dioxide Catalyst — Fong Yih Sen, Shanghai, China. No. 1,890,590. Dec. 13, 1932.

Meat and Fish Conveyed Continuously Through Combination Drying and Smoking House—Rudolf Elbe, Wandsbek, near Hamburg, Germany. No. 1,891,873. Dec. 20, 1932.

Copies of Patents

Complete specifications of any United States patent may be obtained by remitting 10c. to the Commissioner of Patents, Washington, D. C.

Photostatic copies of foreign patents may be obtained at the same address, prices being forwarded on application.

Copies of patents should be ordered by number, as titles used in this digest seldom correspond with title of patent.

THE GOVERNMENT PUBLISHES

DOCUMENTS ARE AVAILABLE *at prices indicated from Superintendent of Documents, Government Printing Office, Washington, D. C. Send cash or money order; stamps and personal checks not accepted. When no price is indicated, pamphlet is free and should be ordered from bureau responsible for its issue.*

State Sanitary Requirements Governing Admission of Livestock. Department of Agriculture Miscellaneous Circular 14 (Revised); 10 cents.

Tariff Commission Publications, revised September, 1932.

Rules of Practice and Procedure and Laws Relating to the United States Tariff Commission. Tariff Commission Miscellaneous Series (Revised); 5 cents.

Cooperative Marketing of Farm Products. Federal Farm Board, Bulletin No. 10; 10 cents. The story of American farmers' marketing organizations.

Index of Analyses of Natural Waters in the United States, 1926 to 1931, by W. D. Collins and C. S. Howard. Geological Survey Water-Supply Paper 659-C; 5 cents.

Statistical Abstract of the United States, 1932. Bureau of Foreign and Domestic Commerce; $1.25. 826 pages. Pertinent statistics from state and private sources bearing on the industrial, commercial and social life of this country.

Federal Specifications. New or revised specifications of the Federal Specifications Board on: Buttermilk, C-B-816; Prunes, Evaporated (or Dried), Z-P-681a; Brains, Calf, PP-B-656; Brains, Hog, PP-B-661; Fatbacks, Dry-Salt-Cured, PP-F-81, Pig's-Feet, PP-P-371; Sausage, Liver, PP-S-86. The above specifications are available from the Bureau of Supplies and Accounts, Navy Department.

Report of the Chief of the Food and Drug Administration. Department of Agriculture.

Fishery Industries of the United States, 1931, by R. H. Fieldler. Department of Commerce, Bureau of Fisheries, Appendix II to Report of Commissioner of Fisheries for the Fiscal Year 1932; 20 cents.

Production Statistics From 1931 Census of Manufactures in preliminary mimeographed form for: Cottonseed oil, cake and meal; canning and preserving fish; flour and other grain-mill products; cheese; prepared feeds for animals and fowls; vinegar and cider; meat packing, wholesale; bakery products; chemicals; condensed and evaporated milk; beverages; poultry killing, dressing, and packing, wholesale; biscuit and crackers; ice cream; canning and preserving fruits and vegetables, pickles, jellies, preserves, and sauces; oleomargarine and other margarines; butter; miscellaneous food preparations; vinous liquors; ethyl alcohol and distilled liquors; salt; oils not elsewhere classified; essential oils; manufactured ice.

Container Specifications. Bureau of Standards Simplified Practice Recommendations on new types of containers, including: (a) Glass containers for mayonnaise and kindred products, SPR131-32; 5 cents. (b) Ice-cream cups and cup caps, SPR132-32; 5 cents. (c) Glass containers for preserves, jellies and apple butter, SPR91, now being revised. Proposed new specifications available in mimeographed form from Bureau.

Eggs and Egg Products. Department of Commerce, Foodstuffs Division; mimeographed (available from Foodstuffs Division at 10 cents per copy). General information and statistics.

Dressing and Packing Turkeys for Market, by Thomas W. Heitz. Department of Agriculture, Farmers' Bulletin No. 1694; 5 cents.

American Fruit and Vegetable Auctions, by J. W. Park. Department of Agriculture Circular No. 250; 5 cents.

Cocoa in São Tomé and Principe, by Leonard J. Schwarz. Bureau of Foreign and Domestic Commerce, Trade Promotion Series No. 138; 5 cents.

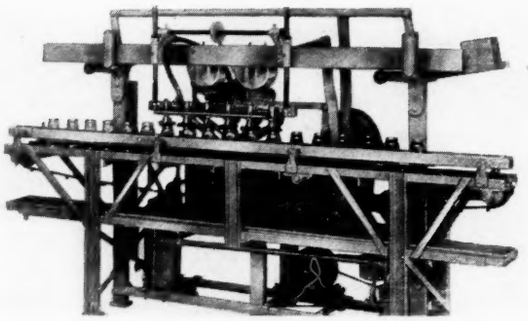
Organizing Dairy Cooperative Marketing Associations. Federal Farm Board, Bulletin No. 11; 5 cents.

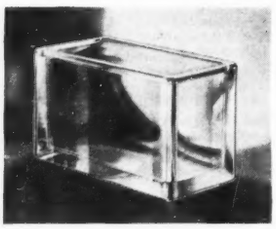
Commerce Yearbook, 1932, Vol. I, United States. Bureau of Foreign and Domestic Commerce; $1.25 (buckram).

NEW EQUIPMENT FOR

Force-Feed Package

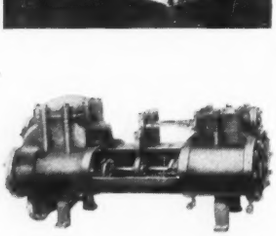
Something new in sanitary packages for confections and other food products to be eaten "on the spot" has been developed by Yum-Kone Corp., Toledo, Ohio. The new container consists of a cardboard cylinder in the end of which is inserted a cardboard piston mounted on a stick. By pushing the stick and the piston into the cylinder, the ice cream, jello or other food contained in the package is forced out at the opposite end. The open end of the cylinder is covered with a cardboard cap.





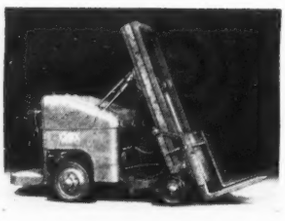
Glass Bricks

A high degree of sanitation and an opportunity to obtain unusual architectural and lighting effects are afforded by a glass building block developed by Owens-Illinois Glass Co., Toledo, Ohio. The block is rectangular in cross-section and may be made of plain or colored glass. Being hollow, the block acts as an insulating material, reducing the large heat losses commonly associated with large expanses of window glass, at the same time permitting ample infiltration of daylight. These blocks are sufficiently strong to be used in the outside walls of industrial plants. They also are suitable for interior and exterior building surfaces.



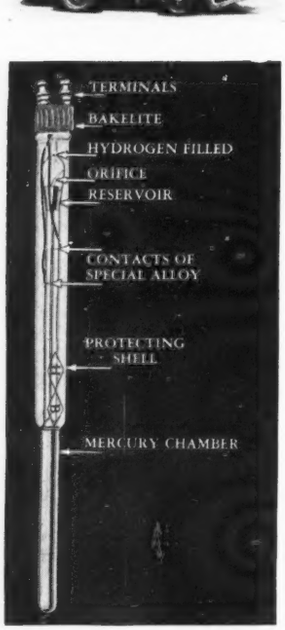
Duplex Steam Pumps

Horizontal duplex steam pumps especially designed for handling either water or chemical solutions were recently put on the market by Worthington Pump & Machinery Corp., Worthington Ave. at Warren St., Harrison, N. J. These pumps are built in the valve plate, turret and pot valve types, stainless-steel, drop-forged valves being used on all models. The various types are constructed especially for the particular use to which they are to be put, and they incorporate a number of new features, according to the manufacturer. They cover a wide range of capacities.



Truck Has Tilting Lift

Shipping and storage containers may be lifted, transferred and tiered with a truck made by Clark Tructractor Co., Battle Creek, Mich. In operation, the truck inserts its lifting fingers under anything that has as much as a 2-in. clearance, tilts it back to a maximum of 20 deg., lifts it, carries at 1 to 6 miles an hour, and tilts it forward 7 deg. to tier it at a height as great as 50 in. The lifting and tilting mechanism is actuated by hydraulic pressure supplied by an oil pump. Motive power is derived from a tractor-type gas engine.



Adjustable Thermo-Regulator

Any temperature between 0 and 500 deg. F. may be controlled to a variation of 1/10 deg. with a terminal type, adjustable, mercury thermo-regulator developed by Hiergesell Bros., 2518 North Broad St., Philadelphia, Pa. This unit, the Red Top, may be adjusted for high or low temperatures by forcing the mercury from the lower bulb into the upper storage chamber, and vice versa. Allowance is made in the instrument for ample overshoot to eliminate re-setting of the operating point. The capillary and reservoir is filled with dry hydrogen to dampen the spark at point of contact. An outer glass shell completely incloses the operating parts, adding rigidity, and a protecting metal case can be furnished. The Red Top thermo-regulator is used in combination with a relay designed to operate within 12 milliamperes at 110 volts, 60 cycles, through protecting condenser and resistors.

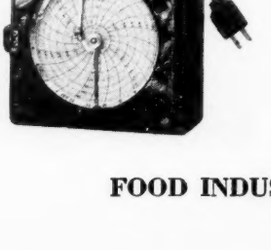
Oil-Resistant Belt

Rubber belting which resists chemicals and oils, said to be the first product of its kind, has been developed by B. F. Goodrich Co., Akron, Ohio. The new belting is held to have given satisfactory service after complete immersion in oil for several days, although exposure to oil reduces the life of ordinary belting by two-thirds.

Small Temperature Recorders

Miniature temperature recorders using a chart 4¾ in. in diameter are a recent development of C. J. Tagliabue Manufacturing Co., Park & Nostrand Aves., Brooklyn, N. Y. The instruments are furnished in two forms. One has a single pen and is used for charting temperatures only. The other, with two pens, draws a continuous record of the running and idling time of the refrigerator motor as well as of the temperature. The only difference in the two is the addition of an electromagnetic mechanism for actuating the time-operation pen.

A new square-case, dial-indicating thermometer only 4 in. across also is announced by Tagliabue. It is furnished in ranges of 0 to +50 deg. F. and —20 to +40 deg. F.



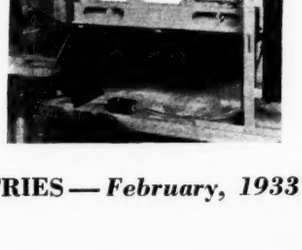
Automatic Brining Machine

Containers are filled without stopping as they pass through the automatic vacuum brining machine recently put on the market by Elgin Manufacturing Co., Elgin, Ill. A conveyor chain carries the containers through the unit and six filling heads lower onto the containers and move them as they are filled. The filling heads then raise and move back to catch the next six containers. Further advantageous features attributed to the unit are rapid change-over for different sizes of containers and overflow jars that are self-emptying. The speed of the briner is placed at 50 containers a minute.

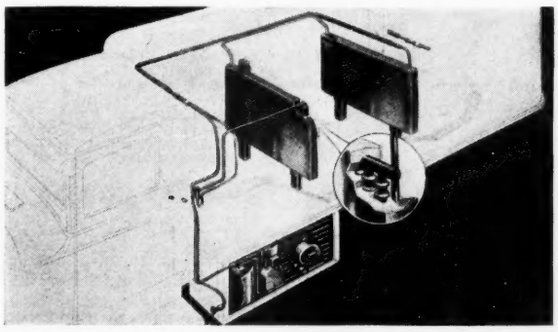
The machine may be used to brine pickles, cherries, olives and like products and to fill chili sauce, catsup, tomato juice, cider and similar fluid substances into bottles, jars and round or square cans.

Vibrator Filling Machine

Direct feed from storage bin to container is made possible by a vibrator filling machine manufactured by Toledo Precision Devices, Inc., Toledo, Ohio. The unit consists of a Toledo scale, an "electric eye" cutoff attachment and a vibrator feeding mechanism. When the operator pushes a button, the vibrator flows the commodity into the container, the photoelectric cell cutting off the vibrator when the package contains the desired quantity. The operator then replaces the filled container with an "empty," pushes the button, and the process is repeated. The unit will package as many as 200 1-lb. packages per hour to a tolerance of 1/64 oz. The mechanism can be made more automatic by additional attachments.



FOOD MANUFACTURERS



"Storage Battery" Refrigeration

Refrigeration of the "storage-battery" type has been made available by Kold-Hold Manufacturing Co., Lansing, Mich. The storage units consists of a metal container in which an evaporator coil is submerged in a eutectic solution which freezes at any predetermined temperature to provide any refrigerating temperature desired. The solution freezes to a solid ice having a high latent heat of fusion, and the units will maintain a constant temperature for 15 hours or more. Trucks equipped with Kold-Hold refrigeration may have individual compressors, these being driven from an electrical outlet when the truck is not in operation. But where several trucks are used, a central refrigerating unit may be employed. A low-temperature truck body consumes from 3 to 5 kw-hr. per day. Advantages attributed to the system include low initial and operating cost, convenience and cleanliness. The system is suitable also for ice cream cabinets and for butchers' and dairymen's coolers.

THE MANUFACTURERS OFFER

Labeling Machine—In a 4-page folder leaflet, New Way Canning Machines Co., Hanover, Pa., illustrates its M-H model labeler and explains how it simplifies labeling. The machine accommodates a wide range of can sizes and permits changing to any size in less than two minutes without using a wrench or screwdriver.

Variable-Speed Pulleys — Variable speed-control units for light horsepower requirements comprise the subject matter of a 10-page catalog, V-200, by Reeves Pulley Co., Columbus, Ind. Features of construction, operating principles and engineering information are covered by the publication.

Welding—"Weld It Well" is the title of a fully illustrated, 20-page catalog issued by Harnischfeger Corp., Milwaukee, Wis., to tell the advantages of modern arc welding and to describe its welding apparatus.

Belt Drives—A condensed, 32-page catalog, giving dimensions and prices of Dayton "cog-belt" drives, together with simplified data for the calculation of special drives, is offered by Dayton Rubber Manufacturing Co., Dayton, Ohio. Some 85 applications of cog-belt drives are illustrated.

Motors — A folder-leaflet by Lincoln Electric Co., Cleveland, Ohio, presents the construction features peculiar to the company's motors, pointing out how each contributes to the "extra horsepower" said to be embodied in the machines.

Icing—Facts and formulas pertaining to the proper use of icing comprise the subject matter of a 48-page, pocket-size booklet, "The Icing Room," by Nulomoline Co., 109 Wall St., New York, N. Y.

Ice Cream Freezers — In a well-illustrated, 20-page booklet, York Ice Machinery Corp., York, Pa., describes its line of ammonia ice cream freezers and points out their advantages. Specifications are included.

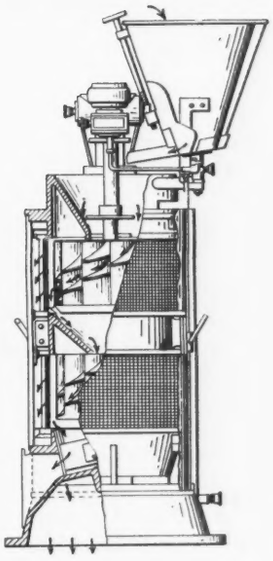
Credit Management—"Effective Credit Management" is the title of a 24-page booklet by Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y., that describes the credit practices of a number of manufacturers and wholesalers in various industries. It deals with such subjects as investigating credits and sources of information, analyzing financial statements, terms of sale, establishing limits to credits and effecting collections.

Steam Traps—Valuable operating data comprise the bulk of the material presented in a 30-page booklet by Armstrong Machine Works, Three Rivers, Mich. This book is designed to enable anyone to select the proper steam traps for all steam-heated units, such as cooking kettles and evaporating pans. The booklet answers many operating problems, gives the dollar cost of steam leaks of various magnitudes and describes the effect of entrained air on heating temperatures. A chapter is devoted to the method of calculating rate of steam condensation.

Closures—Three folder leaflets devoted, respectively, to a discussion of 10-cent packages, to the importance of eye-appeal in container closures and to new prices have been prepared by Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N. Y. Forty-three different food containers are pictured on the leaflet discussing 10-cent packages.

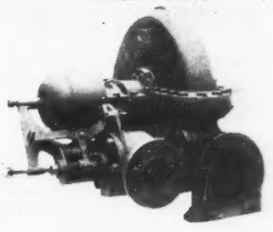
High-Speed Turbine Sifter

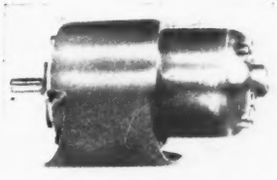
Although it may be installed in a space 2½ ft. square, the Blutergess high-speed turbine sifter manufactured by Abbe Engineering Co., Inc., 50 Church St., New York, N. Y., has a high capacity. It will handle 5,000 lb. of flour per hour in "security" sifting with a 14-mesh screen and will sift 500 to 1,000 lb. of cocoa per hour to a mesh 100 to 200. The sifter consists essentially of two superimposed turbines, mounted on a common vertical axis, and a surrounding wire cloth. Material to be sifted is fed through a hopper into the turbines and thrown against the surrounding screen, the particles striking the screen at a constant angle. The sifting cloth, of which only 6¾ sq.ft. is required, is ordinarily made of phosphor bronze, brass or steel. A 1½-hp. motor, or a belt drive, supplies the power.



Mechanical-Drive Steam Turbine

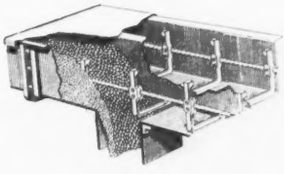
As a prime mover for centrifugal pumps, fans and other rotating equipment, General Electric Co., Schenectady, N. Y., has developed a non-condensing steam turbine that may be rated at anywhere from 5 to 250 hp. and operated at any steam pressure from 80 to 400 lb. It is a single-stage machine with two rows of revolving buckets and is suitable for driving equipment at speeds from 1,200 to 4,000 r.p.m. A centrifugal governor provides proper speed regulation. The turbine is particularly applicable where exhaust steam may be used.





Speed Reducers Of Wide Application

Motorized speed reducers with efficiencies rated as high as 97 per cent and with a design that adapts them to nearly any type of motor have been placed on the market by Louis Allis Co., Milwaukee, Wis. The reducers are available in ratings from ¾ to 75 hp. and with output speeds of 4 to 400 r.p.m. Built-in styles can be furnished with the motor characteristics and style of mounting best suited to the particular application. The integral style, shown in the illustration, is generally used when an open motor or an inclosed non-ventilated motor is employed. The flexible style, in which the entire motor, without alteration, is mounted on the gear casing, is furnished where conditions require an explosion-proof, splashproof or other protected type of motor.



Transparent Tape

Transparent cellulose wrappings are said to be sealed securely and economically by Tran-Cel-Seal, a gummed transparent cellulose tape developed by Gummed Tape & Devices Co., 173 Lafayette St., New York, N. Y. This tape is dispensed in the same manner as ordinary gummed sealing tape, and it may be used in conjunction with automatic packaging machines. The tape is odorless and may be used on all food products.

Flow of Material Induced by Conveyor

Loose materials are induced to flow in a compact, quiescent mass through a covered trough along any predetermined path—horizontal, vertical or inclined—with the Redler conveyor, marketed by Pneumatic Scale Corp., Ltd., Norfolk Downs (Quincy), Mass. The conveying element comprises an endless chain or cable with propelling units at intervals. These units are crossbars or are shaped like an L, H or a heart. Conveyance is made possible by the fact that friction between layers of the material is greater than that between the material and the sides of the trough, plus, on an inclined or vertical lift, the opposing force of gravity.

Advantages attributed to this conveyor are a small quantity of power for operation, the ability of a single unit to operate in any direction, freedom from overloading, self-cleaning, low upkeep, dustless and sanitary operation, and gentle handling of materials.

CONSTRUCTION NEWS

	Proposed Construction Pending	Contracts Awarded — Awarded January	Cumulative 1933 — No. Awards	Cumulative 1933 — Total
Bakery Products	$550,000	$58,000	2	$58,000
Beverage	2,083,000	240,000	5	240,000
Canning and Preserving	57,000	50,000	1	50,000
Confectionery	30,000	.....	..	.....
Grain Mill Products	250,000	.....	..	.....
Ice, Manufactured	.....	75,000	1	75,000
Meats and Meat Products	45,000	40,000	1	40,000
Milk Products	408,000	56,000	2	56,000
Sugar	300,000	.....	..	.....
Miscellaneous	401,000	258,000	5	258,000
Total	$4,124,000	$777,000	17	$777,000

PROPOSED WORK BIDS ASKED

Baking Plant—National Biscuit Co., 499 West 14th St., New York, N. Y., will receive bids late in April for baking plant and shipping and storage building at 401-59 West 15th St. Estimated cost $550,000. Louis Wirsching, Jr., 449 West 14th St., is architect.

Beet Sugar Factory—Corporation, c/o Simpson & Mitchell Investment Co., Winnipeg, Man., Can., contemplates the construction of a beet sugar factory. Estimated cost $300,000. Maturity indefinite.

Brewery—Arrowhead Brewery Co., c/o A. C. Zimmerman, Archt., 824 H. W. Hellman Bldg., Los Angeles, Calif., is having plans prepared for brewery at Mill and E Sts., San Bernardino. Estimated cost $100,000.

Brewery—Mangus Beck Brewing Co., Rand Bldg., Buffalo, N. Y., plans the construction of a brewery. Estimated cost $200,000. Julius Schultz, Main and Utica Sts., Buffalo, is architect.

Brewery—City Brewing Corp., 912 Cypress Ave., Brooklyn, N. Y., is having preliminary plans prepared for altering brewery. Estimated cost with equipment $300,000. Paulsen & Heintz, Inc., c/o Owner, are engineers.

Brewery—Erie Brewing Co., c/o J. M. Magenan, Vice-Pres., Erie, Pa., is having plans prepared for reconditioning brewery here. Estimated cost to exceed $150,000.

Brewery—J. I. Feather, Uniontown, Pa., contemplates the construction of a new brewery. Estimated cost $200,000.

Brewery—Fort Schuyler Brewing Co., 434 Catherine St., Rome, N. Y., plans to alter and equip brewery here, to include bottling plant. Estimated cost $28,000.

Brewery—Liebman Breweries, 36 Forrest St., Brooklyn, N. Y., are having plans prepared for altering and installing equipment in brewery at Forrest and East Stanwix Sts.; also building 2 story addition. Estimated cost $30,000. Allmendinger & Schlendorf, 1 Hanson Pl., Brooklyn, are architects.

Brewery—G. A. Mueller, Archt., 1001 American Radiator Bldg., Detroit, Mich., is preparing plans for brewery at Indianapolis, Ind. Owner's name withheld. Estimated cost $100,000. Maturity indefinite.

Brewery—Mundus Brewing Co., A. A. Darmstaetter, Pres., 1736 Howard St., Detroit, Mich., recently incorporated, has taken over plant of Mundus Products Co. on Howard St., and will rebuild same for brewery. Project will include vats, tanks, piping and new bottling and labeling machines. Private plans. Estimated cost $200,000.

Brewery—Ohio State Brewing Co., c/o J. Schott & Son, Cincinnati, O., is having preliminary plans prepared by Harry Roderick and Floyd Freeman, Archts. and Engrs., 42 East Gay St., Columbus, O., for brewery on South Side. Estimated cost $500,000.

Brewery—Sierra Brewery Corp., C. S. Forve, Mgr., 539 South Spring St., Los Angeles, Calif., plans to remodel brewery here. Project will involve $35,000 for building improvements, $150,000 for refrigerating and botting equipment and $90,000 for delivery equipment and supplies.

Confectionery Plant—Lomber Candy Co., Joliet, Ill., plans to alter its plant here. Estimated cost $30,000.

Creamery—Mistletoe Creameries, Austin St., San Antonio, Tex., had plans prepared by A. B. and R. M. Ayres, Archts., Smith Young Tower, San Antonio, for 2-3 story creamery. Estimated cost $65,000.

Dairy—Copper State Creamery, Six Points, Ariz., plans to rebuild its dairy recently destroyed by fire. Estimated cost $80,000. Maturity indefinite.

Ice Cream Plant—Furnas Ice Cream Co., 34 North Bway., Akron, O., plans the construction of a 1 story ice cream plant on Grant St. Estimated cost $100,000.

Ice Cream Plant—Maple Leaf Dairy, J. J. Soeder, Pres., 1609 Suburn Ave., Cleveland, O., contemplates the construction of a 1 story ice cream plant. Estimated cost $50,000.

Ice Cream Plant—C. Mamos, Penacook Rd., Concord, N. H., had plans prepared for 2 story, 40x60 ft. ice cream plant. N. Simons, 33 North Main St., Concord, is architect.

Ice Cream Plant—Soeder Sons Milk Co., E. Soeder, Pres., 3801 Payne Ave., Cleveland, O., contemplates the construction of an ice cream plant, on East 38th St. Estimated cost $50,000.

Milk Plant—Arpin Milk Products Co., Arpin, Wis., contemplates the construction of a plant here. Estimated cost $35,000. Maturity indefinite.

Grain Elevator—Midland & Pacific Grain Corp., Crossfield, Alta., Can., plans the construction of a grain elevator. Estimated cost $60,000.

Grain Elevator—North Star Co., Ltd., Buttress, Sask., plans the construction of a grain elevator. Estimated cost $40,000.

Grist Mill—Nowak Milling Corp., Hammond, Ind., plans to repair and recondition its grist mill. Estimated cost to exceed $150,000.

Macaroni Factory—V. Arena & Co., 451 Moore St., Norristown, Pa., plans the construction of a factory on Main St. Estimated cost $50,000.

Macaroni Factory—Savoia Macaroni Mfg. Co., 1535 63rd St., Brooklyn, N. Y., plans to rebuild macaroni factory recently damaged by fire. Estimated cost with equipment $28,000.

Packing Plant—City Packing Co., Fostepco Heights, Ft. Worth, Tex., contemplates the construction of a meat packing plant. Estimated cost $45,000. Maturity indefinite.

Packing Plant—California Walnut Growers' Assn., W. M. Dula, Secy., Visalia, Calif., plans the construction of a walnut packing plant. Estimated cost $45,000.

Packing Plant—Coast Packing Co., 3275 East Vernon Ave., Vernon, Calif., had plans prepared by J. C. Barr, Engr., 2069 Randolph St., Huntington Park, Calif., for addition to packing plant. Estimated cost $28,500.

Packing Plant—Garcia Bros., Graton, Calif., contemplate the construction of an apple and fruit packing plant. Estimated cost with equipment $28,000.

Factory and Packing Plant—G. M. Ricci, Archt., 175 Smith St., Perth Amboy, N. J., is preparing plans for a factory and packing plant on Maguire St. Estimated cost $150,000. Address owner care of architect.

Packing Plant—Stumpf Bros., 3225 South Meridian St., Indianapolis, Ind., are having preliminary plans prepared for packing plant. Estimated cost $40,000.

Packing Plant—Weil Packing Plant, Evansville, Ind., plans the construction of a packing plant. Estimated cost $50,000.

Fruit and Produce Storage Plant—Farris Bros., Court St., Charleston, W. Va., plan to repair fruit and produce storage plant recently damaged by fire. Estimated cost $38,000.

CONTRACTS AWARDED

Bakery—Ideal Bread Co., 183 Dovercourt Rd., Toronto, Ont., Can., awarded contract for 2 story addition to bakery to R. G. Kirby & Sons, 539 Yonge St., Toronto. Estimated cost $30,000.

Bakery—Vincent Pennisi, 107-44 Sutphin Blvd., Jamaica, N. Y., awarded contract for bakery to D. Milone, 36 Merrick Rd., Rockville Center, N. Y.

Bottling Plant—C. W. Schantz, 371 South B St., Hamilton, O., will build a bottling and beverage plant at 72 Walnut St., to be leased by Coca Cola Co., Hamilton. Work will be done by day labor and separate contracts. Estimated cost with equipment $40,000.

Brewery—American Brewing Co., C. H. Loeb, Treas., 420 Hudson St., Rochester, N. Y., will alter and build additions to brewery here. Work will be done by day labor and separate contracts. Estimated cost $50,000. Owner is now purchasing equipment.

Brewery—Connecticut Valley Brewing Corp., T. E. Coleman, Pres., South Colony St., Meriden, Conn., will recondition brewery and install beer making equipment. Estimated cost $30,000. Work will be done by day labor.

Brewery—Michel Brewing Corp., 937 Fulton St., Brooklyn, N. Y., awarded contract for brewery at 3rd and Bond Sts., Brooklyn, to Jansen Contracting Co., 8124 11th Ave., Brooklyn. Estimated cost $80,000.

Brewery—Standard Brewery, Rochester, N. Y., plans to recondition its brewery, also install new equipment. Estimated cost $40,000. Work will be done by day labor.

Cannery—Western Canning Co., Ltd., G. Newman, Mgr., c/o W. Lowe, Archt., 1056 Hubert St., Oakland, Calif., awarded contract for 1 story, 50x400 ft. cannery at Chico, Calif., to H. Schuster Co., Ltd., 354 Hobart St., Oakland. Estimated cost $50,000.

Pasteurizing Plant—S. Adler, 453 East 133rd St., New York, N. Y., awarded contract for pasteurizing plant at above address, to Riger Building Corp., 145 West 41st St., New York. Estimated cost $28,000.

Milk Depot—Kay White Products Co., D. Katzenstein, Pres., 156th and Barry Sts., New York, N. Y., awarded contract for milk depot to D & W Construction Co., 55 West 45th St., New York.

Ice Plant—W. F. Moody & Co., A. O. U. W. Bldg., Little Rock, Ark., awarded contract for 30 ton ice plant at Dyersburg, Tenn., to Hopkins Wade, El Dorado, Ark. Estimated cost $75,000.

Packing Plant—Swift & Co., South San Francisco, Calif., will build an addition to its plant by day labor. Estimated cost $40,000.

Packing Plant—Wilbert Products Co., 805 East 139th St., New York, N. Y., awarded contract for altering and enlarging 1 story, 100x100 ft. food packing and storage plant on Southern Blvd., to Paul Sylvestri, c/o Owner.

Pretzel Factory—Los Angeles Saratoga Chip Co., 2555 Chamber St., Vernon, Calif., will build a 1 story, 75x143 ft. pretzel factory on Pacific Blvd. by day labor.

Warehouse—Empire Produce Co., Elmira, N. Y., awarded contract for 1 story, 105x130 ft. warehouse at State and Clinton Sts., to L. C. Whitford, Wellsville, N. Y., $63,390.

Warehouse—Niagara Frontier Food Co., Terminal, Buffalo, N. Y., awarded contract for 3 story, 100x100 ft. warehouse at Clinton and Bailey Aves., to J. W. Cowper Co., Rand Bldg., Buffalo. Estimated cost $50,000.

Warehouse—Witwer Grocery Co., c/o Jackson Vinegar Works, 64 Main St., Dubuque, Ia., awarded contract for rebuilding warehouse and office building at 15 Main St., recently destroyed by fire, to Ulrich Willy, 2545 Jackson St., Dubuque. Estimated cost $65,000.